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UNIVERSITY OF KANSAS.

CATALOGUE
1903-'04.



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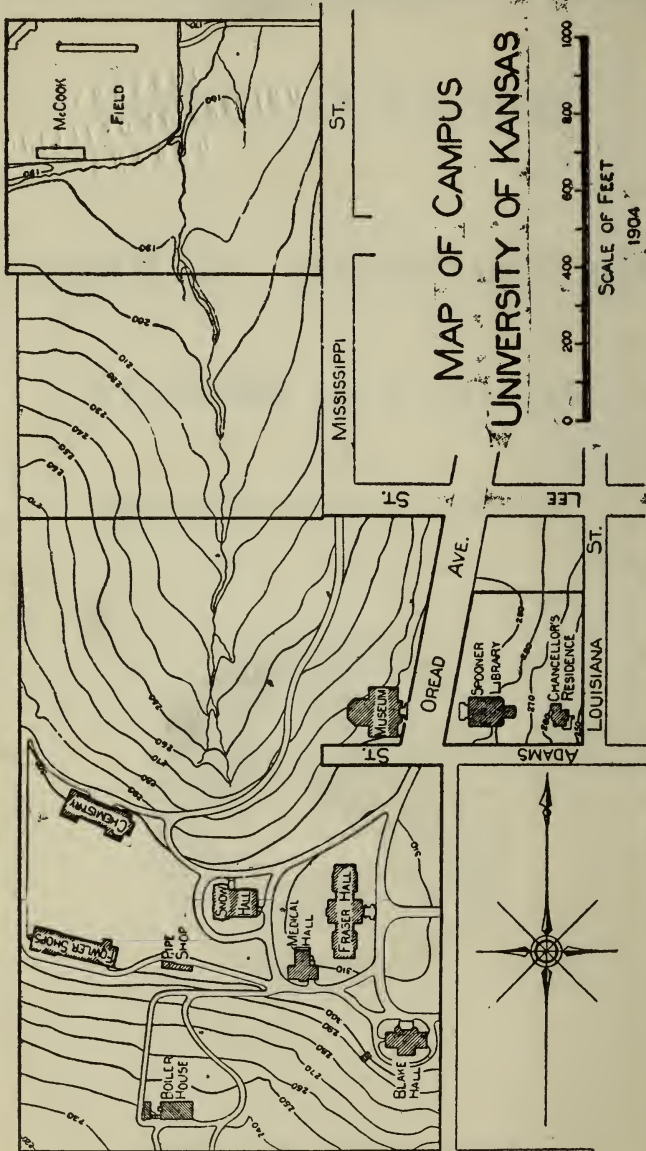


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Thirty-eighth
Annual Catalogue
OF
The University of Kansas
For the Year 1903-'04,
AND
Announcements for 1904-'05.



Lawrence, Kansas,
April 1904.



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Office Hours.

THE CHANCELLOR OF THE UNIVERSITY,

Room 4, Fraser Hall,
9 A. M. to 12 M. and 1:30 to 4 P. M.

THE SECRETARY OF THE UNIVERSITY,

Room 9, Fraser Hall,
8:30 A. M. to 5 P. M.

THE REGISTRAR OF THE UNIVERSITY,

Room 9, Fraser Hall,
8 A. M. to 12 M. and 1:30 to 5 P. M.

THE DIRECTOR OF THE SUMMER SCHOOL,

Room 28, Fraser Hall,
Tuesdays and Thursdays, 9 to 10 A. M.

THE DEAN OF THE GRADUATE SCHOOL,

Room 13, Fraser Hall,
9 to 10 A. M.

THE DEAN OF THE COLLEGE OF LIBERAL ARTS AND SCIENCES,

Room 3, Fraser Hall,
10:15 A. M. to 12:15 P. M.

THE DEAN OF THE SCHOOL OF ENGINEERING,

Room 33, Fraser Hall,
First Term, 10:15 to 11:15 A. M.
Second Term, 11:15 A. M. to 12:15 P. M.

THE DEAN OF THE SCHOOL OF LAW,

Room 1, Fraser Hall,
9 to 10 A. M.

THE DEAN OF THE SCHOOL OF FINE ARTS,

North College,
11 A. M. to 12 M.

THE DEAN OF THE SCHOOL OF PHARMACY,

2d floor, Pharmacy Building,
10 to 11 A. M.

THE ACTING DEAN OF THE SCHOOL OF MEDICINE,

2d floor, Snow Hall,
11 A. M. to 12 M.

Calendar.

Academic Year 1903-'04.

- Jan. 4, Monday — Christmas recess ends.
 Jan. 25 to 29, Monday to Friday inclusive — Semiannual examinations.
 Feb. 1, Monday — Second term begins.
 March 30, Wednesday — First half-term ends.
 March 31 to April 4, Thursday, Friday, and Monday — Spring recess.
 April 5, Tuesday — Second half-term begins.
 May 30 to June 3, Monday to Friday, inclusive — Annual examinations.
 June 2, Thursday — Commencement concert by Music department, School of Fine Arts.
 June 5, Sunday, 8 P. M. — Baccalaureate sermon.
 June 6, Monday, 8 H. M. — Sigma Xi address.
 June 7, Tuesday, 8 P. M. — Annual Alumni address.
 June 8, Wednesday, 10 A. M. — Commencement exercises.
 June 9, Thursday — Opening of Summer Session.

Academic Year 1904-'05.

- Sept. 7, Wednesday — First term begins.
 Sept. 7, 8, 9, and 10, Wednesday, Thursday, Friday, and Saturday — Examination of candidates for admission, and presentation of certificates from high schools, academies, and other institutions.
 Sept. 9, Friday — General assembly of students and annual address, in University Hall, at 10 A. M.
 Nov. 10, Thursday — Second half-term begins.
 Nov. 22, Tuesday — Winter concert by University Orchestra.
 Nov. 24, 25, and 28, Thursday, Friday, and Monday — Thanksgiving recess.
 Dec. 1, Thursday — Winter concert by University Glee and Mandolin Clubs.
 Dec. 13, Tuesday, 8 P. M. — Christmas concert by Music department, School of Fine Arts.

CHRISTMAS RECESS — Saturday, December 24, to Monday, January 9, inclusive.

- Jan. 9, Monday — Christmas recess ends.
 Jan. 23 to 27, Monday to Friday, inclusive — Semiannual examinations.
 Jan. 30, Monday — Second term begins.
 March 29, Wednesday — First half-term ends.
 March 30 to April 3, Thursday, Friday, and Monday — Spring recess.
 April 4, Tuesday — Second half-term begins.
 May 4, Thursday — Spring concert by University Glee and Mandolin Clubs.
 May 16, Tuesday — Spring concert by University Orchestra.
 May 29 to June 2, Monday to Friday, inclusive — Annual examinations.
 June 1, Thursday — Commencement concert by Music department, School of Fine Arts.
 June 4, Sunday, 8 P. M. — Baccalaureate sermon.
 June 5, Monday, 8 P. M. — Phi Beta Kappa address.
 June 6, Tuesday, 8 P. M. — Annual Alumni address.
 June 7, Wednesday, 10 A. M. — Commencement exercises.

1903.	1904.	1905.
JULY.	JANUARY.	JANUARY.
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5 6 7 8 9 10 11	3 4 5 6 7 8 9	8 9 10 11 12 13 14
12 13 14 15 16 17 18	10 11 12 13 14 15 16	15 16 17 18 19 20 21
19 20 21 22 23 24 25	17 18 19 20 21 22 23	22 23 24 25 26 27 28
26 27 28 29 30 31 ..	24 25 26 27 28 29 30	29 30 31
.. .. .	31	
AUGUST.	FEBRUARY.	FEBRUARY.
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2 3 4 5 6 7 8	7 8 9 10 11 12 13	5 6 7 8 9 10 11
9 10 11 12 13 14 15	14 15 16 17 18 19 20	12 13 14 15 16 17 18
16 17 18 19 20 21 22	21 22 23 24 25 26 27	19 20 21 22 23 24 25
23 24 25 26 27 28 29	28 29	26 27 28
30 31		
SEPTEMBER.	MARCH.	MARCH.
S M T W T F S	S M T W T F S	S M T W T F S
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6 7 8 9 10 11 12	6 7 8 9 10 11 12	5 6 7 8 9 10 11
13 14 15 16 17 18 19	13 14 15 16 17 18 19	12 13 14 15 16 17 18
20 21 22 23 24 25 26	20 21 22 23 24 25 26	19 20 21 22 23 24 25
27 28 29 30	27 28 29 30 31	26 27 28 29 30 31 ..
.. .. .		
OCTOBER.	APRIL.	APRIL.
S M T W T F S	S M T W T F S	S M T W T F S
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11 12 13 14 15 16 17	10 11 12 13 14 15 16	9 10 11 12 13 14 15
18 19 20 21 22 23 24	17 18 19 20 21 22 23	16 17 18 19 20 21 22
25 26 27 28 29 30 31	24 25 26 27 28 29 30	23 24 25 26 27 28 29
.. .. .		30
NOVEMBER.	MAY.	MAY.
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8 9 10 11 12 13 14	8 9 10 11 12 13 14	7 8 9 10 11 12 13
15 16 17 18 19 20 21	15 16 17 18 19 20 21	14 15 16 17 18 19 20
22 23 24 25 26 27 28	22 23 24 25 26 27 28	21 22 23 24 25 26 27
29 30	29 30 31	28 29 30 31
.. .. .		
DECEMBER.	JUNE.	JUNE.
S M T W T F S	S M T W T F S	S M T W T F S
.. .. 1 2 3 4 5	 1 2 3 4	 1 2 3
6 7 8 9 10 11 12	5 6 7 8 9 10 11	4 5 6 7 8 9 10
13 14 15 16 17 18 19	12 13 14 15 16 17 18	11 12 13 14 15 16 17
20 21 22 23 24 25 26	19 20 21 22 23 24 25	18 19 20 21 22 23 24
27 28 29 30 31	26 27 28 29 30	25 26 27 28 29 30 ..
.. .. .		

Chronological Table.

- 1861.—Congress set apart and reserved for the use and support of a State University seventy-two sections of land.
- 1863.—Lawrence selected as location for the University of Kansas.
- 1864.—The University organized by the legislature.
- 1865.—March 31, first meeting of the Board of Regents.
- 1866.—July 19, Regents elected the first Faculty of the University, consisting of Francis Huntington Snow, A. M., David Hamilton Robinson, A. M., and Elial Jay Rice, A. M.
- 1866.—North College erected.
- 1866.—September 12, first session of the University opened at North College.
- 1870.—Department of Engineering organized.
- 1872.—Fraser Hall erected.
- 1877.—Department of Music organized.
- 1878.—Department of Law organized.
- 1884.—Medical Hall (old Chemistry Building) erected.
- 1885.—Department of Pharmacy established.
- 1885.—Normal Department discontinued.
- 1886.—Snow Hall erected.
- 1891.—The Preparatory Department discontinued, the work being left to the high schools of the state.
- 1891.—The University reorganized and Schools of Arts, Engineering, Law, Fine Arts and Pharmacy established.
- 1894.—Spooner Library erected.
- 1894.—Chancellor's residence erected.
- 1895.—Blake Hall erected.
- 1896.—The Graduate School established.
- 1899.—The Fowler Shops erected.
- 1899.—The School of Medicine established.
- 1900.—Chemistry and Pharmacy Building erected.
- 1902.—Natural History Museum Building erected.
- 1904.—The name of the School of Arts changed to the College of Liberal Arts and Sciences.
- 1904.—Law Building erected.

General Information.

The General Catalogue of the University of Kansas is issued in the spring of each year, usually in April. A copy will be sent free to any one desiring it.

Separate Catalogues of the SCHOOLS OF THE UNIVERSITY will be issued at the same time with the General Catalogue of the University. Separate catalogues will give complete information as to each school or department of the University. Prospective students of the College of Liberal Arts and Sciences, the School of Engineering, the School of Law, the School of Pharmacy, the School of Fine Arts, the School of Medicine, the Graduate School or the Summer Session will ask for the separate catalogue of the desired School. They are issued free of cost.

The Alumni Catalogue of the University is issued at intervals, giving a list of the graduates of the University. A new issue is in preparation. They are free to graduates and former students of the University.

The University Calendar is posted weekly upon the local bulletin board, announcing lectures, concerts, prizes, and other matters of public interest under the auspices of the University, and as soon as possible will be printed in sufficient numbers for distribution, on request, to high schools of the state and to graduates and former students.

For catalogues and other information, address.

THE UNIVERSITY OF KANSAS Lawrence, Kan.

PART I.
Officers of the University.

The Board of Regents.

CHANCELLOR FRANK STRONG, Lawrence.....	<i>Ex officio.</i>	
HON. THOMAS M. POTTER, Peabody.....	Term expires	1905
HON. ALEXANDER C. MITCHELL, Lawrence, “	“	1905
HON. CHARLES N. CONVERSE, Burlington... “	“	1905
HON. SCOTT HOPKINS, Horton..... “	“	1907
HON. FRANK G. CROWELL, Atchison..... “	“	1907
HON. THOMAS W. BUTCHER, Wellington.... “	“	1907

Officers of the Board.

CHANCELLOR FRANK STRONG.....*President, ex officio.*

THOMAS M. POTTER.....*Vice-president.*

FRANK G. CROWELL.....*Secretary.*

Committees of the Board.

Instruction:

MESSRS. CROWELL, BUTCHER, AND CONVERSE.

Library and Apparatus:

MESSRS. BUTCHER, POTTER, AND MITCHELL.

Finance:

MESSRS. CONVERSE, POTTER, AND CROWELL.

Buildings, Grounds, and Supplies:

MESSRS. POTTER, HOPKINS, AND MITCHELL.

University Lands and Endowments:

MESSRS. MITCHELL, CONVERSE, AND CROWELL.

Reports and Publications:

MESSRS. BUTCHER, POTTER, AND HOPKINS.

Auditing of Accounts:

MESSRS. HOPKINS, CONVERSE, AND MITCHELL.

Administrative Officers.

The University.

FRANK STRONG, PH. D., Chancellor.

WILLIAM H. CARRUTH, PH. D., Vice-president of the Faculty.

WILLIS K. FOLKS, Secretary and Purchasing Agent.

GEORGE O. FOSTER, A. B., Registrar.

WILLIAM H. JOHNSON, A. M., High-school Visitor.

EBEN F. CROCKER, Superintendent of Buildings and Grounds.

The Schools.

FRANK W. BLACKMAR, PH. D., Dean of the Graduate School.

OLIN TEMPLIN, A. M., Dean of College of Liberal Arts and Sciences.

FRANK O. MARVIN, A. M., Dean of the School of Engineering.

JAMES W. GREEN, A. M., Dean of the School of Law.

CHARLES S. SKILTON, A. B., Dean of the School of Fine Arts.

LUCIUS E. SAYRE, B. S., PH. M., Dean of the School of Pharmacy.

CLARENCE E. MCCLUNG, PH. D., Acting Dean of School of Medicine.

WILLIAM H. CARRUTH, PH. D., Director of the Summer Session.

The Library and Gymnasium.

CARRIE M. WATSON, A. B., Librarian.

JAMES NAISMITH, A. B., M. D., Director of Gymnasium.

The Museums.

FRANK STRONG, PH. D., *ex officio* Director of the Museums.

FRANCIS H. SNOW, PH. D., LL. D., Curator of the Entomological Collections.

LEWIS L. DYCHE, A. M., M. S., Curator of the Mammals, Birds, and Fishes.

CLARENCE E. MCCLUNG, PH. D., Curator of the Vertebrate Paleontological Collections.

ERASMUS HAWORTH, PH. D., Curator of the Geological and Mineralogical Collections.

WILLIAM C. STEVENS, M. S., Curator of the Herbarium.

ALEXANDER M. WILCOX, PH. D., Curator of the Classical Museum.

The University Geological Survey of Kansas.

FRANK STRONG, PH. D., Director, *ex officio*.

ERASMUS HAWORTH, PH. D., Superintendent and Geologist.

EDGAR H. S. BAILEY, PH. D., Chemist.

The University Council.

THE CHANCELLOR OF THE UNIVERSITY, *Chairman.*

PROF. WILLIAM CHASE STEVENS, *Secretary.*

Professors and Heads of Departments of the Schools
of the University.

The Faculties.

The Faculty of each School is made up of those giving
instruction in that School.

Each Faculty is the legal governing body in all matters
connected *exclusively* with that School.

Officers of Instruction and Administration.

The officers of instruction and administration in the University are divided into the following groups:

PROFESSORS.

ASSOCIATE PROFESSORS.

ASSISTANT PROFESSORS.

INSTRUCTORS.

ASSISTANT INSTRUCTORS.

LIBRARIAN AND ASSISTANTS.

BUSINESS AND EXECUTIVE OFFICERS.

FELLOWS AND SCHOLARS.

Professors.

FRANK STRONG.

A. B., 1884, A. M., 1893, PH. D., 1897, (Yale).

*Chancellor of the University, and President of the Faculties, 1902.**

(4 F.†) 1313 Louisiana St.

WILLIAM HERBERT CARRUTH.

A. B., 1880, (University of Kansas).

A. M., 1889, PH. D., 1893, (Harvard).

Vice-president of the Faculty, Director of the Summer Session, and Professor of Germanic Languages and Literatures, 1882; 1879.

(28 F.) 1342 Louisiana St.

FRANCIS HUNTINGTON SNOW.

A. B., 1862, A. M., 1865, PH. D., 1881, (Williams).

LL. D., 1890, (Princeton).

Professor of Organic Evolution, Systematic Entomology, and Meteorology, 1901; 1866.

(Mu.) 1345 Louisiana St.

*The date after each title indicates the year of appointment to the present rank; a second date denotes the year of first appointment in the University, when that fact is not indicated by the first date.

†Abbreviations: C = Chemistry Building.

F = Fraser Hall.

L = Spooner Library.

M = Medical Hall.

Mu = Museum of Nat. Hist.

N = North College.

B = Blake Hall.

S = Snow Hall.

Sh = Fowler Shops.

EPHRAIM MILLER.

A. B., 1855, A. M., 1858, PH. D., 1895, (Allegheny).

Professor of Mathematics and Astronomy, 1875; 1874.

(23 and 25 F.) 1244 Tennessee St.

JAMES WOODS GREEN.

A. B., 1866, A. M., 1886, (Williams).

Dean of the School of Law, and Professor of Law, 1878.

(1 F.) 637 Tennessee St.

FRANK OLIN MARVIN.

A. B., 1871, A. M., 1874, (Allegheny).

Dean of the School of Engineering, and Professor of Civil Engineering, 1882; 1875.

(33 F.) 1603 Massachusetts St.

EDGAR HENRY SUMMERFIELD BAILEY.

PH. B., 1873, (Yale).

PH. D., 1883, (Illinois Wesleyan).

Professor of Chemistry and Metallurgy, and Director of Chemical Laboratories, 1883.

(C.) 1329 Ohio St.

ALEXANDER MARTIN WILCOX.

A. B., 1877, PH. D., 1880, (Yale).

Professor of Greek Language and Literature, 1885.

(18 F.) 1605 Vermont St.

LUCIUS ELMER SAYRE.

B. S., 1897, (Michigan University).

PH. G., 1866, PH. M., 1896, (Philadelphia).

Dean of the School of Pharmacy, and Professor of Pharmacy, 1885.

(C.) 1310 Louisiana St.

LUCIEN IRA BLAKE.

A. B., 1877, (Amherst).

PH. D., 1884, (Berlin).

Professor of Physics and Electrical Engineering, 1887.

(2d floor, B.) New Eldridge.

LEWIS LINDSAY DYCHE.

A. B., B. S., 1884, A. M., 1886, M. S., 1888, (University of Kansas).

Professor of Systematic Zoology, 1889; 1883.

(Mu.) 1611 Massachusetts St.

FRANK WILSON BLACKMAR.

PH. D., 1889, (Johns Hopkins).

Dean of the Graduate School, and Professor of Sociology and Economics, 1889.

(13 F.) 1115 Ohio St.

CHARLES GRAHAM DUNLAP.

A. B., 1883; A. M., 1899, (Ohio Wesleyan).

LITT. D., 1892, (Princeton).

Professor of English Literature, 1890; 1887.

(14 F.) 925 Kentucky St.

CARL ADOLPH PREYER, (Vienna).

Professor of Piano, Counterpoint, Canon, and Fugue, 1892.

(N.) 1136 Louisiana St.

OLIN TEMPLIN.

A. B., 1886, A. M., M. S., 1890, (University of Kansas).

*Dean of the College of Liberal Arts and Sciences, and**Professor of Philosophy*, 1893; 1886. (3 F.) 1025 Missouri St.

EDWIN MORTIMER HOPKINS.

A. B., 1888, PH. D., 1894, (Princeton).

Professor of Rhetoric and English Language, 1893; 1889.

(22 F.) 1201 Tennessee St.

FRANK HEYWOOD HODDER.

A. B., 1883, PH. M., 1883, (Michigan University).

Professor of American History and Administration, 1893;
1891.

(13 F.) 1115 Louisiana St.

ERASMUS HAWORTH.

B. S., 1881, M. S. 1884, (University of Kansas).

PH. D., 1888, (Johns Hopkins).

Professor of Geology, Mineralogy, and Mining, and Superintendent of the Geological Survey, 1894; 1892.

(S.) 1503 Massachusetts St.

ARTHUR TAPPAN WALKER.

A. B., 1887, (University of New York City).

A. M., 1892, (Vanderbilt).

PH. D., 1898, (Chicago).

Professor of Latin Language and Literature, 1897.

(17 F.) 1647 Louisiana St.

WILLIAM CHASE STEVENS.

B. S., 1885, M. S., 1893, (University of Kansas).

Professor of Botany, 1899; 1889. (9 and 10 S.) 1121 Louisiana St.

ARVIN SOLOMON OLIN.

A. B., 1892, (Ottawa University).

A. M., 1894, (University of Kansas).

Professor of Education, 1899; 1893. (12 F.) 1134 Louisiana St.

WILLIAM ALEXANDER GRIFFITH.

(Jullien Art School, Paris).

Professor of Drawing and Painting, 1899.

(S.) 1144 Indiana St.

EUGÉNIE GALLOO.

B. L., 1892, (Michigan University).

Académie de Paris, Brevet, 1881, Sorbonne, 1884, (University of France).

A. M., 1895, (University of Kansas).

Professor of Romance Languages and Literatures, 1900;

1892.

(27 F.) 1324 Louisiana St.

WILBUR CORTEZ ABBOTT.

A. B., 1892, (Wabash College).

B. Litt., 1897, (Oxon.)

Professor of European History, 1902.

(11 F.) 1116 Louisiana St.

WILLIAM LIVESEY BURDICK.

A. B., 1882, A. M. 1884, (Wesleyan).

Ph. D., 1885, (Grant).

LL. B., 1898, (Yale).

Professor of Law, 1902; 1898.

(1 F.) Jackson Block.

CHARLES SANFORD SKILTON.

A. B., 1889, (Yale).

Dean of the School of Fine Arts, and Professor of Musical Theory and Organ, 1903.

1108 Ohio St.

CHARLES EDWARD HUBACH.

(Graduate of the New England Conservatory of Music).

Professor of Voice.

(N.)

RICHARD THEODORE ELY, Ph. D., LL. D.

Director of the School of Economics and Political Science, and Professor of Political Economy, in the University of Wisconsin.

Lecturer in Economics. (October, 1904.)

Associate Professors.

HENRY BYRON NEWSON.

B. S., 1883, Ph. D., 1892, (Ohio Wesleyan).

Associate Professor of Mathematics, 1892; 1890.

(24 F.) 1702 Massachusetts St.

JAMES NAISMITH.

A. B., 1887, (McGill University).

M. D., 1898, (Gross Medical College).

Associate Professor of Physical Education, and Chapel

Director, 1898.

(Basement, S.) 1108 Tennessee St.

MARSHALL ALBERT BARBER.

A. B., 1891, (University of Kansas).

A. M., 1894, (Harvard).

Associate Professor of Cryptogamic Botany and Bacteriology, 1899; 1895.

(M.) (9 S.) 1136 Louisiana St.

SAMUEL JOHN HUNTER.

A. B., 1893, A. M., 1893, (University of Kansas).

Associate Professor of Entomology, 1899; 1896.

(6 and 7 S.) 1309 Ohio St.

EDWARD BARTOW.

A. B., 1892, (Williams).

Ph. D., 1895, (Goettingen).

Associate Professor of Chemistry, 1899; 1897.

(C.) 1344 Ohio St.

IDA HENRIETTA HYDE.

B. S., 1891, (Cornell).

Ph. D., 1896, (Heidelberg, Germany).

Associate Professor of Physiology, 1899.

(M.) 1229 Tennessee St.

MILES WILSON STERLING.

A. B. 1883, A. M. 1893, (University of Kansas).

Associate Professor of Greek, 1901; 1883.

(18 F.) 1129 Louisiana St.

RAPHAEL DORMAN O'LEARY.

A. B., (University of Kansas, 1893; Harvard, 1895).

Associate Professor of English, 1901; 1896.

(22 F.) 1106 Louisiana St.

WILLIAM EDWARD HIGGINS.

B. S., 1888, LL. B., 1894, (University of Kansas).

Associate Professor of Law, 1901; 1899. (8 F.) 1024 Ohio St.

CLARENCE ERWIN McCLUNG.

Ph. G., 1892, A. B., 1896, A. M., 1898, Ph. D., 1902, (University of Kansas).

Acting Dean of the School of Medicine, and Associate Professor of Zoology, 1901; 1897. (M.) 1301 Ohio St.

HUGO DIEMER.

M. E., 1896, (Ohio State University).

Associate Professor of Mechanical Engineering, 1901.

(Resigned.)

(Sh.) 800 Kentucky St.

GEORGE HOWARD HOXIE.

A. B., 1893, A. M., 1896, (Union University).

M. D., 1901, (University of Zurich).

Associate Professor of Anatomy, 1902. 900 Tennessee St.

WILLIAM HAMILTON JOHNSON.

A. B., 1885, A. M., 1892, (University of Kansas).

Associate Professor, and High-school Visitor, 1903.

(3 F.) 1201 Oread Ave.

WILLIAM WITHERLE LAWRENCE.

A. B., 1898, (Bowdoin).

Ph. D., 1903, (Harvard).

Associate Professor of English Literature, 1903.

(22 F.) 1104 Tennessee St.

Assistant Professors.

HANNAH OLIVER.

A. B., 1874, A. M., 1888, (University of Kansas).

Assistant Professor of Latin, 1890. (17 F.) 802 Tennessee St.

MARTIN EVERETT RICE.

B. S., 1891, M. S., 1893, (University of Kansas).

Assistant Professor of Physics and Electrical Engineering, 1892.

(1st floor, B.) 1223 Vermont St.

ELMER FRANKLIN ENGEL.

A. B., 1892, (University of Kansas).

A. M., 1898, (Harvard).

Assistant Professor of German, 1892.

(28 F.) 1211 Kentucky St.

FRANK EMERSON WARD.

(State Normal, Indiana).

Superintendent of Fowler Shops and Shop Instruction,
1899; 1889.

(Sh.) 1336 Kentucky St.

ARCHIBALD HOGG.

A. B., 1894, LL. B., 1896, (University of Kansas).

Assistant Professor of Philosophy, 1899.

(12 F.) 1015 Kentucky St.

WALTER RICHARD CRANE.

A. B., 1895, A. M., 1896, (University of Kansas).

PH. D., 1901, (Columbia).

Assistant Professor of Mining Engineering, 1899.

(Basement, F.) 1546 Massachusetts St.

HAMILTON PERKINS CADY.

A. B., 1897, PH. D., 1903, (University of Kansas).

Assistant Professor of Chemistry, 1899.

(C.) 1600 Kentucky St.

RALPH WALDO CONE.

A. B., 1895, (University of Kansas).

A. M., 1897, (Harvard).

Assistant Professor of Sociology and Economics, 1899.

(13 F.) 1310 Louisiana St.

GEORGE LUTHER LINCOLN.

A. B., 1896, A. M., 1897, (Harvard).

Assistant Professor of French, 1899.

(27 F.) 1345 Louisiana St.

L. D. HAVENHILL.

PH. C., 1893, PH. M., 1894, (Michigan University).

B. S., 1903, (University of Kansas).

Assistant Professor of Pharmacy, 1899.

(42 C.) 1609 Vermont St.

WILLIAM CHRISTIAN HOAD.

B. S., 1898, (University of Kansas).

Assistant Professor of Civil Engineering, 1900.

(32 F.) 1540 Kentucky St.

ALMA LE DUC.

PH. B., 1899, (University of Chicago).

Assistant Professor of French and Spanish, 1900.

(27 F.) 1433 Tennessee St.

CHARLES MORGAN STERLING.

A. B. 1897, (University of Kansas).

Assistant Professor of Pharmacognosy, 1901.

(41 C.) 923 Indiana St.

ALBERTA LINTON CORBIN.

A. B., 1893, (University of Kansas).

PH. D., 1902, (Yale).

Assistant Professor of German, 1901. (28 F.) 1108 Ohio St.

JOHN NICHOLAS VAN DER VRIES.

A. B., 1896, A. M., 1899, (Hope).

PH. D., 1901, (Clark).

Assistant Professor of Mathematics, 1901.

(23 F.) 927 Kentucky St.

FREDERIC NEWTON RAYMOND.

A. B., 1896, (University of Kansas).

A. M. 1897, (Columbia).

Assistant Professor of English, 1901.

(22 F.) 811 Mississippi St.

EDGAR GEORGE FRAZIER.

PH. B., 1900, (Tabor), 1901, (University of Chicago).

Assistant Professor of Public Speaking and Debate, 1901.

(25, 5th floor, F.) 1327 New Hampshire St.

MARGARET LYNN,

B. S., 1889, (Tarkio).

A. M., 1900, (University of Nebraska).

Assistant Professor of English, 1901. (22 F.) 1108 Ohio St.

RICHARD McNAMEE FREEMAN.

E. E., 1900, (Lehigh).

Assistant Professor of Electrical Engineering, 1901.

(Sh.) 1132 Tennessee St.

CARL LOTUS BECKER.

B. L., 1896, (University of Wisconsin).

Assistant Professor of European History, 1902.

(11 F.) 802 Mississippi St.

FRANK EGBERT BRYANT.

B. L., 1899, A. M., 1901, (University of Michigan).

Assistant Professor of English, 1902.

(22 F.) 1116 Louisiana St.

GEORGE JUSSEN HOOD.

B. S., 1902, (University of Kansas).

Assistant Professor of Mechanical Drawing, 1902.

1447 Vermont St.

RALPH EMERSON BASSETT.

A. B., 1889, A. M., 1890, (Harvard).

Assistant Professor of Romance Languages, 1903.

(27 F.) 1108 Ohio St.

EDWY LYCURGUS TAYLOR.

PH. B., 1901, (Yale).

Assistant Professor of Civil Engineering, 1903.

(32 F.) 1129 Louisiana St.

DAVID FORD McFARLAND.

A. B., 1900, A. M., 1901, (University of Kansas).

M. S., 1903, (Yale).

Assistant Professor of Chemistry, 1903.

(C.) 929 Connecticut St.

ARTHUR JEROME BOYNTON.

A. B., 1901, (Harvard).

A. M., 1902, (Columbia).

Assistant Professor of Sociology and Economics, 1903.

(13 F.) 1809 Ohio St.

CHARLES HAMILTON ASHTON.

A. B., 1887, (Union).

A. M., 1893, (Harvard).

Assistant Professor of Mathematics, 1903.

(24 F.) 1240 Rhode Island St.

FREDERICK HILL WOOD.

A. B., 1897, LL. B., 1899, (University of Kansas).

Assistant Professor of Law, 1903.

(1 F.) 539 Tennessee St.

Instructors.**GEORGE WILLIS HANSON.***Forge and Foundry Instructor, 1899.*

(Sh.) 1717 Vermont St.

MARGUERITE ELIZA WISE.

A. B., 1901, (University of Kansas).

Instructor in Botany and Entomology, 1901.

(8 and 10 S.) 1339 Tennessee St.

MAULSBY WILLETT BLACKMAN.

A. B., 1901, A. M., 1902, (University of Kansas).

Instructor in Zoology and Histology, 1901.

(S.) 1033 Rhode Island St.

HARRIET GREISSINGER.

Mus. B., 1895, (University of Kansas).

Instructor in Piano, 1902.

(N.) 940 Indiana St.

ERICH MUENTER.

A. B., 1899, (University of Chicago).

Instructor in Germanic Languages and Literatures, 1901.
(28 F.) 1026 Ohio St.

ADAM FREMONT HENDRIX.

A. B., 1893, A. M., 1894, (Central).

Instructor in Latin, 1903. (17 F.) 1130 Tennessee S

EUGENE SMITH.

M. D., 1876, (Rush).

Demonstrator in Anatomy, 1903.
(Basement, S.) 736 Kentucky St.

EDWIN FISK STIMPSON.

B. S., 1890, (University of Kansas).

Instructor in Physics Laboratory, 1903; 1901.
(B.) 1237 Tennessee St.

ELISE NEUENSCHWANDER.

A. B., 1898, (University of Kansas).

Instructor in French, 1903. (27 F.) 1324 Louisiana St.

FRANK EVERETT JONES.

(Armour Institute).

Instructor in Carpentry and Pattern-making, 1903.
(Sh.) 1845 Tennessee St.

JEAN BOWERSOCK.

(Packer Institute.)

Instructor in Violin, 1903. (N.) 1437 Tennessee St.

MARY COOLIDGE FISH.

(Sargent Normal School of Physical Training).

Instructor in Physical Education, 1903.
(Basement, S.) 1808 Ohio St.

HERBERT WILLIAM EMERSON.

Ph. C., 1901, B. S., 1902, (University of Michigan).

Instructor in Pharmacy, 1903. (25 C.) 1401 Kentucky St.

Assistant Instructors.

CARL F. GUSTAFSON.

A. B., 1899, (McPherson College).

A. M., 1902, (University of Kansas).

Assistant Instructor in Chemistry, 1902. (B.) 1229 Ohio St.

ULYSSES SIMPSON GRANT PLANK.

B. S., 1902, (University of Illinois).

Manager of Athletics and Assistant Instructor in Physical Education, 1903. (Basement, S.) 1231 Oread Ave.

LULU GARDNER.

Assistant Instructor in Rhetoric, 1903.

(22 F.) 1116 Tennessee St.

BLANCHE LYONS.

(New England Conservatory of Music).

Assistant Instructor in Voice, 1904.

(N.)

MAUDE BEATRICE COOKE.

(University of Kansas).

Assistant Instructor in Piano, 1904.

(N.)

MAUD MILLER.

Mus. B., 1898, (University of Kansas).

Assistant Instructor in Piano, 1904.

(N.) 940 Indiana St.

JULIA RIGHTER.

Mus. B., 1897, (University of Kansas).

Assistant Instructor in Piano, 1904.

(N.) 1132 Tennessee St.

LOUISE WIEDEMANN.

Mus. B., 1897, (University of Kansas).

Assistant Instructor in Piano, 1904.

(N.) 835 Massachusetts St.

LARRY M. PEACE.

A. B., 1901, (University of Kansas).

Preparator and Demonstrator in the Botanical Laboratory, 1902.

(S.) 1111 Mississippi St.

ELMER VERNER McCOLLUM.

A. B., 1903, (University of Kansas).

Laboratory Assistant in Chemistry, 1903.

(C.) West Warren St.

HANDEL T. MARTIN.

Museum Assistant in Paleontology, 1899.

(M.)

(Now on expedition to Patagonia.)

ELBERT STEPHEN TUCKER.

Museum Assistant in Systematic Entomology, 1902.

(M.) 1218 Tennessee St.

LEVERETT ALLEN ADAMS.

A. B. 1903, (University of Kansas).

Museum Assistant in Zoology, 1903. (M.) 741 Tennessee St.

Librarian and Assistants.

CARRIE M. WATSON.

A. B., 1877, (University of Kansas).

Librarian, 1887. (L.) 1345 Tennessee St.

HELEN BINNINGER SUTLIFF.

A. B., 1890, (University of Kansas).

Cataloguer, 1890. (L.) 1200 Tennessee St.

CLARA SCIOTO GILLHAM.

A. B., 1884, (University of Kansas).

Loan Desk Assistant, 1894. (L.) 1345 Tennessee St.

EDITH M. CLARKE.

A. B., 1895, (University of Kansas).

Accession Assistant, 1895. (L.) 1210 Ohio St.

DORA CATHERINE RENN.

Reference Assistant, 1899.

(L.) 1235 Tennessee St.

MARY MAUD SMELSER.

Reference Assistant, 1903.

(L.) 940 Kentucky St.

Business and Executive Officers.

WILLIS K. FOLKS.

Secretary of the University, and Purchasing Agent.

(9 F.) West California Road.

GEORGE O. FOSTER.

A. B., 1901, (University of Kansas).

Registrar of the University. (9 F.) 1324 Ohio St.

EBEN F. CROCKER.

Superintendent of Buildings and Grounds.

(Basement, F.) 113 Park St.

EDWARD E. BROWN.

Accountant.

(9 F.) 1336 Massachusetts St.

MINNIE MOODIE.

Secretary to the Chancellor.

(4 F.) Southeast Lawrence.

LENA MARGARET DAVIS.

Assistant to the Registrar.

(9 F.) 1145 Rhode Island St.

Fellows and Scholars.

FRED KEPLINGER.

A. B., 1900, (University of Kansas).

Teaching Fellow in Mathematics, 1903.

(24 F.) 942 Mississippi St.

IDA ELIZABETH McKNIGHT.

A. B., 1903, (University of Kansas).

Teaching Fellow in English, 1903. (22 F.) 1400 Tennessee St.

OSCAR BARTON SEYSTER.

A. B., 1903, (University of Kansas).

Fellow in European History, 1903.

(11 F.) 120 Lee St.

JOHN ERIC WELIN.

A. B., 1888, A. M., 1900, (Augustana College).

Fellow in Chemistry, 1903.

(C.) 838 Ohio St.

CAROLINE B. SPANGLER.

A. B., 1881, (University of Kansas).

Fellow in German, 1903.

(28 F.) 644 Mississippi St.

ROY WALTER WINTON.

(University of Kansas).

Fellow in French, 1903.

(28 F.) 1324 Louisiana St.

WILBUR D. VINCENT.

A. B., 1903, (University of Kansas).

Fellow in Education, 1903.

(12 F.) 1002 Mississippi St.

CHARLES E. CARPENTER.

A. B., 1901, (University of Kansas).

Fellow in American History, 1903. (14 F.) 1340 Tennessee St.

HOWARD A. SAWYER.

A. B., 1903, (University of Kansas).

Fellow in Sociology, 1903.

(13 F.) 1205 Kentucky St.

CHARLES F. ADAMS.

A. B., 1902, (University of Missouri).

A. M., 1903, (University of Kansas).

Snow Research Scholar in Systematic Entomology, 1903.

BLANCHE THOBURN.

A. B., 1896, (University of Kansas).

Sara T. D. Robinson Research Scholar at Marine Biological Laboratory, 1903.

CARRIE JAYCOX.

Marcella Howland Memorial Scholar, 1903.

CORA TAYLOR.

Lucinda Smith Buchan Memorial Scholar, 1903.

IRENE GILCHRIST.

Association of Collegiate Alumnae Scholar.

PART II.

The University.

The University.

Organization.

The work of the University is comprehended in the schools and departments mentioned below. Everything pertaining to the University organization is under the control of the Board of Regents. Each school and department is also under the control of the Chancellor and a separate faculty of instruction.

Departments of Instruction.

- I.—The Graduate School.
 - II.—The College of Liberal Arts and Sciences.
 - III.—The School of Engineering.
 - 1. The Civil Engineering Course.
 - 2. The Electrical Engineering Course.
 - 3. The Mechanical Engineering Course.
 - 4. The Mining Engineering Course.
 - 5. The Chemical Engineering Course.
 - IV.—The School of Law.
 - V.—The School of Fine Arts.
 - 1. The Course in Piano Playing.
 - 2. The Course in Organ Playing.
 - 3. The Course in Violin Playing.
 - 4. The Course in Voice Culture.
 - 5. The Course in Drawing and Painting.
 - 6. The Course in Elocution.
 - VI.—The School of Pharmacy.
 - 1. The Short Course in Pharmacy.
 - 2. The Three-year Course in Pharmacy.
 - 3. The Collegiate Course in Pharmacy.
 - VII.—The School of Medicine.
 - VIII.—The Summer Session.
- Institutions Connected with the University and under its Control.**
- IX.—The Library.
 - X.—The Gymnasium.
 - XI.—The Museums.
 - XII.—The University Geological Survey.

The Graduate School. In the College of Liberal Arts and Sciences and the School of Engineering there are advanced courses leading to the degrees of master of arts and science, doctor of philosophy, and the higher engineering degrees. These courses have been organized into a Graduate School, open to graduates of this and, under certain conditions, other universities and colleges.

The College of Liberal Arts and Sciences. The College of Liberal Arts and Sciences offers instruction in literature, science, and the arts, leading to the degree of bachelor of arts. It is the central department of the University and the foundation upon which all the rest are built. In it are included many of the courses offered in the other departments of the University, and there is no distinct separation of faculties, nearly all being included in the Faculty of the College of Liberal Arts and Sciences. The courses of study are mainly elective and presume four years of residence work.

The School of Engineering offers courses in civil, electrical, mechanical, mining and chemical engineering, leading to the degree of bachelor of science, requiring four years of residence work.

The School of Law offers three years of legal instruction, leading to the degree of bachelor of laws.

The School of Fine Arts offers courses in piano, organ and violin playing, voice culture, drawing, painting, and elocution.

The School of Pharmacy offers two, three and four years' work in pharmaceutical study.

The School of Medicine offers the first two years of a regular four-year medical course. Completion of the work of the two years admits the student to the third year of any medical college in the American Association of Medical Schools, if offered in addition to the first two years of a college course.

The Summer Session (six weeks) is intended to meet the wants of teachers and others who wish to pursue collegiate study but are unable to attend the regular sessions of the University. Collegiate credit is allowed for certain courses offered.

The Library. The library of the University is regarded as the center of the instructional life of the University. It is used to supplement the instruction in all departments, and also for wide reading for purposes of general information by students of the University.

The Gymnasium. The gymnasium is the center of the physical education of the students in general and also of the athletics of the University.

The Museums. The museums are used for the storing of collections valuable from a scientific point of view, and also for the purpose of supplementing the scientific instruction of the University.

The Geological Survey. The Geological Survey is connected with the University only by fact that the director, superintendent and chemist are officers in the University. The work is done by these officers, and especially by the superintendent, with whom almost the entire management rests, without extra compensation. It is regarded as work which the University should do for the state, and the appropriation for the Survey is used entirely for the ordinary expenses of the Survey.

Government.

The legislature of 1889 passed an act providing for the government of the University and repealing all former legislation bearing upon the same subject. This act declares that the government of the University shall be vested in a board of seven Regents, six of whom shall be appointed by the governor and confirmed by the senate, and whose term of office shall be four years; that the Board of Regents shall be a body corporate, under the name of "The Regents of the University of Kansas," and as such may sue and be sued, make contracts, and hold and transfer property, both real and personal, for the University.

The Board of Regents is also invested with the power to elect a Chancellor, who shall be the chief officer of the University, and president of the Board of Regents, with the full power of a Regent; to appoint professors, assistants, tutors; to increase and diminish their number as the interest of the University may require; to employ officers and employees, as in their judgment the needs of the University require.

The Board is also empowered to confer such degrees and grant such diplomas as are usually conferred and granted by institutions of learning.

Discipline.

That the generosity of the state may not be abused, and that perfect justice may be done all who are earnestly striving to make the best possible use of the opportunities offered, there is but a single requirement, *unexceptional deportment and strict attention to University duties.*

The University and the State.

The University of Kansas is an integral part of the free public-school system of the state. It was established by an act of the legislature of 1864, and its object, as defined by that act, is to "provide the inhabitants of the state with the means of acquiring a thorough knowledge of the various branches of literature, science, and the arts." In realizing the object thus set for it, the University stands in direct connection with the high schools of the state. It begins where the high school ends, and thus completes, for so many as avail themselves of the advantages, the thorough education which the state endeavors to provide. Persons who have completed, in any high school or other institution of learning, the work required in preparation for the University, are admitted to its privileges without examination. For this reason the high schools and academies of the state have in general arranged their courses of study in accordance with the University requirements. Though the University was established and is maintained, primarily, for the sons and daughters of Kansas, it also opens its doors, at very moderate tuition, to the young men and women of other states.

As the head of the public educational system of Kansas, the University endeavors to encourage whatever may contribute to the higher intellectual and moral interests of the state. Believing that the strength and value of the University are measured by its service to the state at large, and wishing to reach as many of the citizens as possible in a helpful and stimulating way, the authorities cordially invite all who desire to pursue courses of study or investigation to connect themselves with the University. All who are seeking special information or self-culture and the highest type of citizen life and influence should feel that, by the generosity of the state, advice and information are freely placed at their command.

History and Location.

The idea of a State University in Kansas dates from the early days of Kansas territorial government. Each of the constitutions adopted for the territory of Kansas during the period of its memorable struggles provided for the establishment of an institution of higher learning, to be supported by public funds. The last of these, which became, on the admission of Kansas to the Union, the constitution of the state, declares that "provision shall be made by law for the establishment, at some eligible and central point, of a State University, for the promotion of literature and the arts and sciences."

By an act of Congress, approved January 29, 1861, the day on which Kansas was admitted to statehood, seventy-two sections of

land were set apart and reserved for the use and support of a State University. The state accepted the trust, and in 1863 the legislature selected the city of Lawrence as the location for the institution. One year later the legislature passed an act organizing the University and giving to it the name of "The University of Kansas." A charter was immediately drawn up, and the government of the institution was vested in a Board of Regents, appointed by the governor.

The Board thus appointed held its first meeting on March 21, 1865, and decided to open a preparatory department as soon as the citizens of Lawrence should provide rooms for that purpose. This the citizens undertook to do, and by the middle of September, 1866, they were enabled, by the aid of gifts from various individuals and organizations, to erect the building now known as North College. The first Faculty of the University had been elected by the Board of Regents in July of the same year, and on the 12th of September the University was opened to the young men and women of the state.

In 1876 the legislature of the state established a normal department, which, though successful, was discontinued in 1885. The Law School was opened in October, 1878, and the School of Pharmacy was established in 1885. A course in engineering was arranged as early as 1873, but remained a part of the collegiate department until 1891, when the School of Engineering was organized and the collegiate department became known as the School of Arts. During the same year the preparatory department was discontinued, and the departments of music and art were combined to form the School of Fine Arts. The Graduate School was organized in 1896; and in 1899 the preparatory medical course, which had been offered in the collegiate department since 1880, was extended into a regular medical course, constituting the work of the School of Medicine. In 1904 the Board of Regents changed the name of the School of Arts to the College of Liberal Arts and Sciences.

Rev. R. W. Oliver, the first Chancellor of the University, resigned his position after one year of service, and was succeeded by Gen. John Fraser. In 1874, Dr. James Marvin was made Chancellor. His resignation, in 1883, was followed by the election of Dr. Joshua A. Lippincott. Prof. Francis H. Snow, who had been a member of the Faculty from the beginning, was elected Chancellor in 1889. In 1901, on account of failing health, Chancellor Snow resigned. Mr. W. C. Spangler, a graduate of the University and a member of the Board of Regents, was appointed to act as Chancellor until the election of a regular incumbent. Frank Strong, Ph. D., was elected in April, 1902, and assumed the office August 1 of that year.

The University is situated on a projection of the bluffs bordering the Kansas river valley, known as Mount Oread. The view from the campus and buildings includes a broad and varied expanse of valley and upland, dotted with evidences of the productiveness of the soil and the thrift of the people.

Lawrence is a city of about 12,000 inhabitants, and is situated forty miles west of Kansas City. It is a healthful city, and offers many advantages as a place of residence for those desiring the benefits afforded by the University.

Buildings and Grounds.

The University campus comprises about fifty acres. There are eleven University buildings, seven of which were erected by the state and four by private gifts. Nine of these buildings are used for purposes of instruction, the remaining two being the heating plant and the Chancellor's residence.

North College. This structure was the first building to be erected. It was completed in 1866, from which time until 1872 the entire work of the University was carried on within its walls. In 1872 Fraser Hall was completed, and North College was for a time closed. In 1890 it was again opened, and, until the end of the school year 1893-'94, was used by the School of Law. North College is fifty feet square, three stories high, and contains eighteen rooms. It is at present used by the School of Fine Arts.

Fraser Hall. This building was erected in 1872, to better accommodate the growing school and to relieve the crowded rooms of North College. It is 246 feet in extreme length, 98 feet wide in center, wings 62 feet each. There are fifty-four rooms in this building, of which one, the main audience room, containing an electric pipe-organ, is 94 feet long and 56 feet wide. This room has a seating capacity of 1200. There are also in Fraser Hall eighteen lecture-rooms, each large enough to accommodate classes of seventy-five to eighty students. In this building are located the executive offices of the University, including the Chancellor's offices, the office of the Secretary, and the office of the Registrar. The north half of the first floor is devoted to the use of the School of Law, including the law library.

Medical Hall. This building is a structure in the form of a T, the main part, extending east and west, being 80 by 35 feet, and the L north of this 40 feet square. The basement has been remodeled, and is used for work in anatomy. The large, well-lighted room of the second floor is the physiological laboratory. The east wing of

this floor is occupied as a lecture-room, and is capable of seating seventy-five students. Other rooms are used for private laboratories, library, etc.

Snow Hall. This structure was erected in 1886, by a \$50,000 appropriation of the legislature. It is 110 feet in length by 100 feet wide, two stories in height, each 16 feet in the clear, and is provided with an attic of 12 feet, and with an ample basement, almost entirely above ground. The entire basement is now used for the gymnasium. The geological department occupies the two southeast rooms of the first floor. The departments of zoology and botany occupy the large west room of the first floor for laboratory purposes. The entire second floor is devoted to laboratories for advanced work in botany and zoology. The west room of the attic is used for the geological collections. The south room is the botanical museum. The department of drawing and painting occupies the remainder of the attic. On the first floor of the east half is the lecture-room, extending through the basement and first story, and arranged in amphitheater style. This room has accommodations for 200 students.

Spooner Library. This building was erected in 1894, at a cost of \$75,000, by the generosity of William B. Spooner, of Boston. Its length is 112 feet and extreme width 50 feet. The building consists of two stories and a basement, the greater part of which is above ground. On the first or main floor are located the general reading-room, a newspaper room, and the Librarian's and Cataloguer's offices. The reading-room is admirably arranged and lighted. In the newspaper room are kept the county and city weeklies and dailies published within the state. In addition, dailies published in all the larger cities of the United States are kept on file. The second floor of the building is also devoted to library purposes. In the basement are seminary rooms used for private study of students in the various departments. The building is lighted throughout by electricity. Its every appointment is modern and its facilities and usefulness unexcelled.

Blake Hall. This is of Chateau Renaissance style, three stories high, of Cleveland, Ohio, sandstone, and was completed September, 1895, at a cost of \$58,000. Besides a general lecture-room seating 100 and two classrooms seating 30 each, and a department reading-room and library, there are two general laboratory rooms, covering 3200 square feet. Accessible to these are supply, battery, workshop, balance and chemical rooms. There are also eight smaller rooms specially adapted for physical research, each provided with water, gas, and electricity, and each basement laboratory room has a stone pier, to bed-rock, giving instrument supports free from vibrations

of the building. Heavy electrical currents are so numerous and so planned that to almost any laboratory room all electrical currents from the dynamo station may be delivered. A sixty-cell storage battery is continually charged for laboratory work. The building is constructed without iron below the third story, to lessen magnetic disturbances. The general apparatus room contains now about \$30,000 worth of demonstration and laboratory instruments. The building is heated by the Sturtevant forced-draft system, regulated by electric thermostats in each room. The air is changed automatically every fifteen minutes and in the lecture-room every ten minutes. The total amount of floor space for research purposes is 5690 square feet.

Fowler Shops. This building was completed in 1899, at a cost of \$21,000, and is the gift of Mr. George A. Fowler, of Kansas City, Mo., as a memorial of his father. It is devoted to the mechanical and technical instruction of the School of Engineering, and to the electric light and power plants of the University. Its present educational equipment represents about \$30,000, appropriated by the legislature. The building is of native stone, 224 feet long by 50 feet average width, two stories high, with attic and a handsome tower. It encloses 32,000 square feet of floor space for instructional purposes. It contains boiler- and engine-rooms equipped and adapted for boiler and engine testing, with generators aggregating 200 horse-power, for lighting and power for all the University buildings; forge room and brass foundry, metal- and wood-working departments, dynamo and transformer laboratory, with photometer room, fitted with recent types of appropriate machines, so distributed as to give comprehensive and exact technical instruction. Two rooms, 50 by 30 feet, are devoted to the engineering laboratories of the civil and mechanical departments. The pumping machinery of the water and fire-protection system of the University is also placed in the engine-room.

The Chemistry and Pharmacy Building. This building was completed in 1900. The material used is native limestone, laid in horizontal courses, with recessed pointing. The building is arranged specifically for laboratory purposes for the departments of chemistry and pharmacy. The entire length of the building is 187 feet, and the greatest width 70 feet. The ground plan shows a central portion (devoted to offices, private laboratories, supply rooms, balance rooms, and smaller recitation rooms) and two wings. The building is three stories in height, with a basement of the same height as each of the stories above; beneath the basement floor there is an air space of four feet, down to the solid rock on which the foundations are laid. The system of heating and ventilation, which has been arranged with special care, includes a fan blower, run by electric power, which

forces tempered air over steam coils and thence into the laboratories and lecture-rooms. The air thus brought into the rooms is carried out by hoods on the sides of the rooms, which are connected with nine-inch tiles, terminating in the chimneys above the roof, each hood being ventilated by an independent flue.

The Natural History Museum Building. The spacious building for the museum of natural history, which has been erected at a cost of \$75,000, furnishes a safe and beautiful home for the natural history collections, estimated to be worth \$300,000. The upper floor is devoted to the collection in entomology and paleontology. The remainder of the building is used for the exhibition of mammals and birds. The offices are occupied by the Curator of Mammals, Birds, and Fishes, and the Curator of the Entomological Collections. The workrooms of the taxidermist are in the basement.

The Law Building. The legislature of 1903 appropriated \$50,000 for a building for the School of Law. This building will be erected during the summer of 1904. It will have three floors, and will include, besides a large library and reading-room, lecture- and recitation rooms, offices, and a practice court-room.

University Organizations.

Religious.

Chapel Exercises. Exercises are held in the University chapel every morning at ten o'clock. Though attendance is not required of students, all are cordially invited, and the services are made as attractive and profitable as possible. They consist of the doxology, Scripture reading, prayer, a hymn, and occasional addresses by the Chancellor and others. On each morning except Friday, short exercises are held from 10 to 10:15. On Friday morning the chapel exercises are held from 10 to 10:30, at which addresses are given by speakers from abroad or by members of the Faculty of the University. During the academic year of 1903-'04 addresses were delivered by Hon. Edward W. Hoch, of Marion; Gen. John C. Black, of Chicago; Corp. James Tanner, of Washington, D. C.; Hon. William A. Calderhead, of Marysville; Mr. John McDonald, of Topeka; Gen. Wm. Appleton Aiken, of Norwich, Conn.; Pres. Andrew S. Draper, University of Illinois; Mr. Alpha Brumage, captain of the football team; Mr. Alfred W. Jepson, of London, England; Prof. Charles I. Hamilton, of Cardiff, Wales; Rev. Willis G. Banker, of Lawrence; Mr. Ewing Herbert, of Hiawatha; Mr. William C. Lansdon, of Fort Scott; Mr. James Willis Gleed, of Topeka; Gov. Willis J. Bailey; Hon. Edwin Taylor, of Edwardsville; Hon. F. Dumont Smith, of Kinsley; Mr. John H. Atwood, of Leavenworth; Dr. Henry B. Ward, University of Nebraska; Rev. J. W. Fifield, of Kansas City; Rev. G. N. Luccock, of Oak Park, Chicago; Chancellor Strong; Professors Snow, Carruth, Green, Marvin, Wilcox, Burdick, Blackmar, Higgins, Johnson, Frazier, and Lawrence; Mr. Albert Griffin, of Topeka; Rev. Henry E. Thayer, of Topeka; Dr. Richard Cordley, of Lawrence; Pres. Lemuel H. Murlin, of Baker University; Pres. Norman Plass, of Washburn College; Hon. Thomas A. McNeal, of Topeka; Bishop John M. Walden; Rev. J. A. Renwick, of Topeka.

Young Men's Christian Association. The Young Men's Christian Association is an organization composed of 250 Christian men of the University, banded together for the purpose of preserving and advancing the spiritual interests of the institution. This object is attained through the work of the various departments, and through the helpful Christian fellowship of the young men in their intercourse with one another. Religious services, to which all the men

of the University are cordially invited, are held every Sunday afternoon at the Christian church, and midweek prayer-meetings are held every Thursday evening for a half-hour after supper. The Sunday afternoon services are rendered especially interesting by the presence of prominent speakers from various parts of the state.

The Bible study department organizes classes in systematic Bible study, under competent instructors, and offers courses of study in the life of Christ, the apostolic church, and the Old Testament. During the present year twelve such classes have been maintained, with 125 men enrolled.

The organization leases a large house, which is the center of association life, and affords excellent opportunities for the work of the social committee. Besides the large public receptions at the opening of each term, this committee arranges for a series of socials, reaching different classes of men in their turn; while the parlors of the house, furnished with a piano and games, are open to the men of the University at all times. The association employs a general secretary who devotes all his time to association work.

Members of the association meet students at the trains and assist them in finding rooms and boarding-places. The employment bureau will render all assistance possible to students desiring to earn a part of their expenses. There will be sent to any address, on application, a handbook giving valuable information to prospective students. Address the general secretary of the association.

Young Women's Christian Association. The Young Women's Christian Association is an organization composed of 175 Christian women of the University, united for the attainment of the most perfect development of Christian character among the young women of the institution. The work of the association is divided into eleven departments, each in charge of a permanently organized committee. The midweek religious services of the association are arranged by the devotional committee, which provides able speakers upon subjects of practical interest and value to young women. The missionary committee conducts two classes in the study of foreign missions, and the association, through this committee, assists materially in the support of one of its former members as a Y. W. C. A. secretary in India. There are also ten classes in systematic Bible study, pursuing courses in the life of Christ, in Old Testament history, and in Acts and the Epistles. The philanthropic committee, composed largely of students of practical sociology, cooperates with the young people's societies of Lawrence in regular weekly jail visiting, and with the Y. W. C. A. of Kansas City, Kan., in its social-settlement work.

The association seeks to develop the social as well as the spiritual

life of its members, and for this reason the social committee holds a prominent place in the association work. Receptions to new students are held at the opening of the fall term, and are followed by numerous social gatherings throughout the year, at the Y. W. C. A. house. The association employs a general secretary, who gives one-half of her time to work among the young women.

The members of the organization gladly assist young women just entering the University in securing boarding-places, and, when desired, places in homes where board may be obtained for assistance in housework. The students' handbook, which is published in conjunction with the Young Men's Christian Association, will be sent to any address upon application to Miss Nadine Hosford, 1315 Ohio street, Lawrence, Kan.

Relation to City Churches. The churches of Lawrence unite in extending to the University students a cordial invitation to enter with them into Christian fellowship, and endeavor to make them feel that, irrespective of church membership, they are welcome to all the privileges which the church affords. To this end the various churches hold receptions for the students at the beginning of each year, the pastors preach special sermons to the students from time to time, and the young people's societies arrange for social gatherings to which the students are especially invited. There are also organized, in the principal Sunday-schools of the city, special classes for University students, a number of these classes being in charge of University professors.

By these means the students are brought closely in touch with the religious life of Lawrence, which may well be called a city of churches. A religious census of the student body during the past few years shows that eighty-seven per cent. of the students are church adherents, fifty-six per cent. are church members, and a large number are actively engaged in the work of the various churches and organizations connected therewith throughout the city.

The Bible Chair. April 1, 1901, the Woman's Board of Missions of the Christian Church established a chair of Biblical instruction at Lawrence for the benefit of University students. A site has been purchased on Mount Oread, adjoining the University campus, where, in the residence of the instructor, the work is now being carried on. Plans are under way looking to the erection of a hall especially adapted to the movement's growing needs.

There is no organic relation between the Bible Chair and University. Its support rests entirely upon private gifts. No fees are charged. The privileges are offered to all students, without regard to their religious affiliations, and the courses are arranged to meet their convenience.

The instruction is non-sectarian. The purpose of the work is to bring students in touch with the book which more than any other has made civilization, and which bears the message best adapted to meet man's moral and spiritual needs.

The courses include studies in both the Old and New Testaments, and the history of missions. The Hebrew language is offered to such as are interested or who are preparing for the ministry. Wallace C. Payne, A. B., A. M., (Bethany College), B. D., (Yale University), and graduate student of the University of Chicago, occupies the chair. Mrs. W. C. Payne is associated with him.

During the three years now closing, about 550 students have taken advantage of the opportunity thus given to acquaint themselves more fully with the Bible.

Beginning October 1, 1904, studies will be offered by Professor Payne in the "Life of Christ," "Paul's Life and Letters," "Peter's Life and Writings," and "Old Testament History."

Mrs. W. C. Payne will lecture upon "The Women of the Bible," "The History of Missions," "The Lives of Great Missionaries," and "The Miracles and Parables of Jesus."

In addition to the studies given at the lecture-room, 1300 Oread avenue, during the school year 1904-'05, special attention will be given group classes for Bible study in private, fraternity and sorority houses.

Any one desirous of further information may address Prof. W. C. Payne, 1300 Oread avenue, Lawrence, Kan.

Social and Literary.

Association of the Ladies of the Faculty. The women connected with the University as instructors and the wives of instructors form an association whose purpose is to promote the moral and social welfare of the students, and to further an acquaintance between themselves and the students. To this end, besides general receptions, gatherings for the discussion of questions of common interest are held from time to time. A committee of the association meets the young women at the University during the opening week of the year, and assists them in finding suitable boarding- and rooming-places. Students are always cordially welcome in the homes of the Faculty.

The University Association. This is an organization of students and alumni for the purpose of promoting University spirit and advancing the interests of the University in any possible manner.

Literary Societies. There are four of these: The Burke, the Snow, the X Y Z, and the Adelphic. The objects which they are in-

tended to promote are to cultivate literary taste and the spirit of sound criticism, to develop the necessary qualities of public speaking, and to learn the methods and rules of legislative bodies.

German Club. All students in the German department are eligible to membership in the German Club, which meets once a week in the German recitation room. The object of the club is to furnish the student special opportunity to familiarize himself with the spoken language and to promote an interest in all that is German. Musical and literary programs are rendered each week by students, and the meetings are conducted exclusively in German. There are besides this club several smaller conversational circles, presided over by the instructors in the department. A special feature in connection with the club is the German play, which is given each year by the students of the department.

The Quill Club. An organization of students and instructors especially interested in English composition, which meets to hear and discuss original productions presented by members and others.

French Club. The instructors and students in the French department compose the *Cercle français*, which meets once a week to present a brief literary program, reviews of articles in the leading French magazines, and reports on French topics. French only is used, as one of the chief objects of the club is to provide better opportunities than can be offered in the classroom for the practice of the spoken language. Another opportunity for such practice is found in the French play, which is given towards the close of the year by the students of the department.

Scientific.

Biological Clubs. The instructors and students in each of the biological departments meet weekly, in separate clubs, for the discussion of matters relating to their respective branches of biological science.

Chemical Club. This is composed of the instructors and advanced students in the departments of chemistry and pharmacy. It holds weekly meetings, at which the following are presented: Reports on research work by instructors and students; reports on scientific meetings and associations; reviews of new books and important articles in chemical journals; notices of important inventions and new chemical processes.

Debating and Dramatic.

Debating Council. The council is made up of representatives chosen from the literary societies of the University, and under its supervision are held all preliminary and interstate debates. At present, annual debates are held with the Universities of Nebraska, Missouri, and Colorado.

Oratorical Association. This is a permanent student organization, having charge of all oratorical contests.

Dramatic Club. The students of the University maintain a Dramatic Club for the study and presentation of modern plays. Membership in the club is open to all students, and is secured by dramatic trials held at the beginning of the first term.

Musical.

Orchestra. Young men and women of the University form an Orchestra each year to furnish music for the chapel and special convocations. The Orchestra has been reorganized and enlarged, and is under the direction of the Dean of the School of Fine Arts. Its first annual concert was given in February, and these concerts will be important University, musical and social events.

Young Men's Glee Club. The Men's Glee Club has been reorganized, placed upon a stable foundation, and has begun a successful season. It is under the direction of the head of the department of voice training of the School of Fine Arts. The general control of the club, as to financial obligations and tours, is in the hands of a committee of the University Council. The semiannual concerts, given in December and May, are important University events.

Young Women's Glee Club. The Young Women's Glee Club has also been reorganized. It will give an annual concert, and will, in conjunction with the young men's club, afford opportunity for chorus work at University events. The club is under the same direction as that of the Young Men's Glee Club. It is also under the general control of the committee of the University Council.

Band. A band is formed each year, under a competent leader, among the young men of the University. It furnishes music at the various athletic contests held at the University and for other student gatherings.

The Lawrence Choral Union. The choral union is composed of musical people of Lawrence and students of the University, mainly from the glee clubs named above. The director is the Dean

of the School of Fine Arts. The choral union undertakes chorus work of importance, especially the chorus work for the annual May festival at Lawrence.

The Mandolin Club. This club is for the purpose of combining the musical elements of the University interested in the mandolin, guitar, and banjo. This club assists in the glee club concerts.

University Concerts, Addresses, Lectures, and Art Exhibits.

Concerts.

SEPTEMBER, 1903. Organ recital, by Dean Skilton, assisted by Professor Hubach, tenor, both of the School of Fine Arts.

NOVEMBER, 1903. Two piano recitals, by Professor Preyer and Dean Skilton, of the School of Fine Arts, assisted by Miss Jean Bowersock, of the department of violin of the School of Fine Arts, and Mrs. Blanche Lyons, soprano, of the department of voice.

NOVEMBER, 1903. Organ recital, by Dean Skilton, assisted by Professor Preyer, of the School of Fine Arts, and Mrs. A. P. Hulst, soprano, of Lawrence.

DECEMBER, 1903. Annual Christmas concert, by the faculty and students of the department of music of the School of Fine Arts.

DECEMBER, 1903. Piano recital, by Miss Mary Wood Chase, of Chicago.

DECEMBER, 1903. Concert for violin, soprano, and baritone, by the Ovid Musin Concert Company.

FEBRUARY, 1904. Violin and piano recital, by the Orpheus Company, of Australia.

FEBRUARY, 1904. Concert by the Crampton Concert Company.

FEBRUARY, 1904. Annual concert, by the University Orchestra.

MARCH, 1904. Annual concert, by the University Glee and Mandolin Clubs.

MARCH, 1904. Organ recital, by Dean Skilton, of the School of Fine Arts.

APRIL, 1904. Piano recital, by Professor Preyer and Dean Skilton, of the School of Fine Arts.

MAY, 1904. Piano recital, by Mr. W. W. Lander, of Chicago.

MAY, 1904. Recital, Shakspeare's *Midsummer Night's Dream*, with music by Mendelssohn, by Professor Frazier, of the College of Liberal Arts and Sciences, and Dean Skilton, assisted by Professor Preyer, Miss Jean Bowersock, and the University Orchestra.

MAY, 1904. Musical festival, three concerts—first, May 27, by the faculty of the department of music, School of Fine Arts; second, May 28, by the Chicago Symphony Orchestra; third, May 28 (evening), by the Oratorio Society and the Symphony Orchestra.

Addresses.

The following University addresses were delivered at the University during the academic year 1903-'04; all University students were admitted to these addresses without charge:

JUNE 7, 1903. Baccalaureate sermon, Chancellor Frank Strong.

JUNE 8, 1903. Alumni address, William S. Franklin, (class of '87).

JUNE 9, 1903. The Phi Beta Kappa address, Kate Stephens, (class of '75).

JUNE 10, 1893. Commencement address, Hon. David J. Brewer, associate justice, supreme court of United States.

SEPTEMBER 11, 1903. Address at the opening of the University year, by Charles Moreau Harger, editor of the *Abilene Reflector*. Subject: "The Kansan of To-morrow."

NOVEMBER 6, 1903. Prof. Francis W. Kelsey, of the University of Michigan, secretary of the American Archæological Society. Subject: "Recent Discoveries in Pompeii." Illustrated.

NOVEMBER 23, 1903. Prof. Joseph Jastrow, of the department of psychology, University of Wisconsin. Subject: "Acquisition and Expression."

FEBRUARY 4, 1904. Hon. James C. Horton, of Kansas City, Mo. Subject: "Personal Recollections of Some Early Kansans."

FEBRUARY 12, 1904. Prof. Henry Baldwin Ward, dean of the College of Medicine and professor of zoology, University of Nebraska. Subject: "The Mosquito in the Transmission of Disease." Illustrated.

FEBRUARY 26, 1904. Prof. R. B. Richardson, for ten years director of the American School of Archæology, at Athens, Greece. Subject: "Excavations at Corinth." Illustrated.

APRIL 14, 1904. W. H. McClain, general manager St. Louis Provident Association. Subject: "The Poor of a Great City." Illustrated.

Lectures.

The following lectures were delivered under University auspices during the year, at nominal expense to ticket-holders:

JANUARY 15, 1904. Dr. Edward A. Steiner, professor of applied Christianity, Grinnell College. Subject: "Personal Recollections of Tolstoy."

MARCH 8, 1904. Hon. Jacob A. Riis, noted worker among the people of the slums of New York, biographer of President Theodore Roosevelt. Subject: "The Fight in the Slums." Illustrated.

MARCH 30, 1904. Hon. Henry Watterson. Subject: "Money and Morals."

Art Exhibits.

An annual exhibition of works of art will be held each year at the University in December, together with a course of lectures upon subjects related to fine arts.

During the present year the exhibition consisted of twenty paintings from the Carnegie Institution, of Pittsburgh, Pa., valued at about \$70,000; forty-four paintings in the Brynwood collection belonging to Mrs. B. W. Woodward, and 100 etchings from the collection of Prof. Frank O. Marvin, of the University. The following artists were represented by some of their best works:

John White Alexander.	Adolphe Monticelli.
Fritz Thaulow.	Pierre Puvis de Chavannes.
Elibu Vedder.	J. J. Shannon.
Marianne Stokes.	Jules Bastien-Lapage.
E. A. Walton.	J. Gari Melchers.
Franz Stuck.	Winslow Homer.
George Inness.	D. W. Tryon.
John Lavery.	Jean F. Raffaëlli.
Andre Dauchez.	H. W. Mesdag.
James A. McNeil Whistler.	J. Francis Murphy.
Francis Seymour Haden.	Rembrandt.
Alphonse Legros.	Van Dyke.
William M. Chase.	

The exhibition will be thrown open annually free to the State Teachers' Association. The exhibit of the present year was visited by 300 members of the State Teachers' Association, and by a total of 5000 people.

Athletic.

Athletic Association. This association is organized to encourage and promote the physical education and hygienic training of matriculates and graduates of the University of Kansas, and to foster and supervise athletic games, to wit, baseball, boating, football, tennis, track athletics, basket-ball, and other innocent sports, in connection with the University. Membership in the association is open to all students, graduates, officials, and members of the Faculty.

The Country Club is one of the oldest University organizations. Its object is to take the students on tramps into the country surrounding Lawrence, studying the historical events associated with the vicinity and natural objects in their own realm.

The Golf Club has its links partly on the University grounds. It is a self-supporting, independent organization, and membership is open to students of the University.

General Athletics. The general athletics of the University include football, baseball, basket-ball, tennis, and other forms of exercise.

Intercollegiate Games are held as often as is deemed best, for the encouragement of *esprit de corps* among the students and a friendly rivalry between sister universities.

Control. All forms of exercise, athletics and games are under the control of the director of the gymnasium and his assistants. Competitive games and athletics are encouraged to the extent of inspiring the student to develop his physical condition, but not to the extent of interfering with his studies.

The Athletic Board. All intercollegiate athletic contests are under the control of the University Athletic Board, composed of four students elected by the students, four Faculty members elected by the University Council, the Chancellor of the University, the president of the Athletic Association, and the professor of physical education. The last three are *ex officio* members.

Rules. The University Council has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct is required of all such contestants. The rules of the Chicago conference, supplemented by the Topeka conference, govern in every case.

University Publications.

The University of Kansas Science Bulletin, formerly the *Kansas University Quarterly*, is maintained by the University as the medium for the publication of the results of original research by members of the University. Papers are published in it only on recommendation of the committee of publication, which committee is composed of five members of the scientific faculty. Formerly the *Quarterly* was issued at regular intervals, as indicated by the title, but numbers of the present series appear without regard to specific dates. A volume consists of about 400 pages, with the necessary illustrations. The price of subscription is three dollars a volume. Individual numbers vary in price with the cost of publication. The current volume for the present year is volume II; continuous series, volume XII. Exchanges with similar publications of other colleges or universities and learned societies are solicited. H. B. Newson is corresponding editor. Communications should be addressed to him.

The **University News Bulletin** is issued monthly from the Registrar's office, for the purpose of furnishing the newspapers, high-school students and others of the state items of interest regarding University affairs. It will be sent regularly, without charge, to any one who may express a desire to receive it.

The **University Weekly** is a newspaper published by student representatives from the various schools of the University.

The **Jayhawker** is the annual published each year by the Senior classes of the schools of the University.

The **Kansas University Lawyer** is published monthly by the students of the School of Law, and is devoted to the interests of that school.

The **Graduate Magazine** is published monthly during the academic year by the Collegiate Alumni Association.

The **University Geological Survey Reports** are issued from time to time as material for them is gathered. A statement of the number and character of reports so far published will be found under the heading "University Geological Survey."

Lectures Offered to Kansas Communities.

In order that as many people of the state as possible may receive some immediate benefit from the University as an institution established for the dissemination of learning, a large number of lectures are offered to Kansas communities by the Faculty of the University. For these lectures no charges are made beyond the actual expenses of the lecturers, when the lectures are made free to the public; but when admission is charged the lecturer will require a fee of five dollars, besides expenses. For experimental lectures, or those illustrated with lantern slides, an additional fee of five dollars may be charged. These lectures are suitable for delivery under the auspices of high schools, educational, literary or religious societies.

Recommendation of Teachers.

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies and colleges which may be in need of competent instructors. To this end a committee of the Faculty preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position that may be made vacant. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

PART III.
Departments of Instruction.

I. The Graduate School.

Faculty.

FRANK STRONG, Ph. D., President.

FRANK W. BLACKMAR, Ph. D., Dean, and Professor of Sociology and Economics.

FRANCIS H. SNOW, Ph. D., Professor of Organic Evolution and Systematic Entomology.

EPHRAIM MILLER, Ph. D., Professor of Mathematics and Astronomy.

WILLIAM H. CARRUTH, Ph. D., Professor of Germanic Languages and Literatures.

FRANK O. MARVIN, A. M., Professor of Civil Engineering.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.

LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.

LUCIEN I. BLAKE, Ph. D., Professor of Physics and Electrical Engineering.

LEWIS L. DYCHE, M. S., Professor of Systematic Zoölogy.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

OLIN TEMPLIN, A. M., Professor of Philosophy.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

FRANK H. HODDER, Ph. M., Professor of American History and Administration.

ERASMUS HAWORTH, Ph. D., Professor of Physical Geology and Mineralogy.

ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.

WILLIAM C. STEVENS, M. S., Professor of Botany.

ARVIN S. OLIN, A. M., Professor of Education.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

WILBUR C. ABBOTT, B. Litt., Professor of European History.

CHARLES S. SKILTON, A. B., Professor of Musical Theory, History of the Fine Arts, and Organ.

HENRY B. NEWSON, Ph. D., Associate Professor of Mathematics.

JAMES NAISMITH, M. D., Associate Professor of Physical Education.

MARSHALL A. BARBER, A. M., Associate Professor of Cryptogamic Botany and Bacteriology.

SAMUEL J. HUNTER, A. M., Associate Professor of Entomology.

EDWARD BARTOW, Ph. D., Associate Professor of Chemistry.

IDA H. HYDE, Ph. D., Associate Professor of Physiology.

MILES W. STERLING, A. M., Associate Professor of Greek.

RAPHAEL D. O'LEARY, A. B., Associate Professor of English Language.

HUGO DIEMER, M. E., Associate Professor of Mechanical Engineering.

CLARENCE E. MCCLUNG, Ph. D., Associate Professor of Zoölogy.

GEORGE H. HOXIE, M. D., Associate Professor of Anatomy.

WILLIAM H. JOHNSON, A. M., Associate Professor, and High School Visitor.

WILLIAM W. LAWRENCE, Ph. D., Associate Professor of English Literature.

Administrative Committee.

FRANK W. BLACKMAR.....*Dean.*

FRANK H. HODDER.

WILLIAM H. CARRUTH.

FRANK O. MARVIN.

WILLIAM C. STEVENS.

Purposes of the School.

THE Graduate School provides all the instruction in advanced subjects offered in the University. It is under the direction of the faculty and administrative committee of the Graduate School, the Dean of the Graduate School being chairman of the administrative committee.

The Graduate School was organized mainly out of the College of Liberal Arts and Sciences and the School of Engineering, and the most of the work offered by the Graduate School is given in connection with the several departments of these schools.

It is the business of the faculty of the Graduate School to formulate courses in graduate work; to establish and maintain the requirements for all higher degrees offered by this University; to

make recommendations for those degrees to the Board of Regents; and to fix such regulations as they may deem expedient for the government of the school.

Requirements for Admission.

Admission to the Graduate School ordinarily is granted to graduates of this University holding the bachelor's degree, and to graduates of other colleges and universities of good standing, on presentation of proper evidence of scholarship and testimonials of good character.

Rules for Graduate Work.

Graduate students, whether candidates for a degree or not, must be in regular attendance on such course or courses as may have been selected and approved, and will be required to pass all examinations, or to submit to such other regulations and requirements as may be imposed by the heads of the departments concerned. Graduate students who pursue their work in part elsewhere must conform to the requirements imposed in each case by the administrative committee.

Registration.

In order to enter the Graduate School, a student must present to the Dean of the school a receipt from the Secretary of the University showing that he has paid the required fees. When it is ascertained in what department the student desires to do his major work, the Dean will refer him to the head of that department, who will select the courses, after consultation with the student. The student will then submit the courses to the Dean, and if approved the applicant will be given a card permitting him to register in the office of the Registrar. Work to be counted as graduate work is specified in the catalogue, and must be designated as graduate on the enrolment card, and so specified on the grade cards filed in the Registrar's office.

Degrees Granted.

The University offers eight advanced degrees, viz.:

DOCTOR OF PHILOSOPHY.	CIVIL ENGINEER.
MASTER OF ARTS.	MECHANICAL ENGINEER.
MASTER OF SCIENCE.	MINING ENGINEER.
ELECTRICAL ENGINEER.	CHEMICAL ENGINEER.

Doctor of Philosophy.

The degree of doctor of philosophy will be granted on the ground of advanced scholarship, and the performance of independent work in some special line, under the following conditions:

1. The candidate must be a baccalaureate graduate of this University or of a college or university of good standing; or he must give satisfactory evidence to the faculty of the Graduate School that he possesses an adequate preparation for graduate work.

2. He must make application to the Dean of the Graduate School before the 1st day of October preceding the commencement at which he intends to present himself for the degree, and must then give satisfactory evidence of his ability to read such German and French as may be necessary for the proper prosecution of his studies.

3. He must have spent at least three full college years in resident graduate work at this or some other approved university; the last year must be spent as a resident student of this University. The time spent in attaining the degree of A. M. may be counted toward satisfying this time condition.

4. He must present a thesis showing the result of original research of a high character, and must pass acceptable examinations, both written and oral, in one chief or major study and two allied, subsidiary or minor studies, not more than two of which may be in the same department. The oral examination shall be before the faculty of the Graduate School, where he may be required to defend his thesis. The thesis, embodying the results of original research in some subject connected with his major study, must be presented to the head of the department in which the work was done not later than the 1st of May preceding the commencement at which the degree is to be conferred, and if approved by him shall be placed on file for inspection in the office of the Dean of the Graduate School for at least two weeks. If finally approved, not less than 100 printed copies must be delivered to the Librarian of the University before receiving the degree, or proper security be given for the printing of that number; provided, that if the thesis has already been printed, ten copies only shall be deposited with the Librarian.

Master of Arts and Master of Science.

The master's degree will be granted only after at least one full year's graduate work. The candidate must have completed with high credit six full courses or their equivalent chosen from the course of graduate study; other courses may be offered only by the special consent of the departments concerned and of the administrative committee; but courses for which a professional certificate or diploma is given will not be counted toward this degree. Not more than three graduate credits can be given in one term.

The degree of master of arts will be granted to bachelors of arts and the degree of master of science to graduates in engineering.

When the candidate is first permitted to enroll as a graduate student, he shall select the department in which his major work is to be

done. The head of that department will, in consultation with the candidate, select the courses to be taken for the ensuing term. These may be confined to the department of his major study, or may be selected from that and not more than two other departments. The decision of the head of the department shall be subject to the veto of the Dean of the Graduate School; appeal may be made from the decision of the Dean to the Graduate Faculty. If the student subsequently changes his selection of a major department, the graduate work already done shall not be counted toward the master's degree unless approved by the head of his new major department.

Not later than the 15th of May preceding the commencement at which the degree is to be conferred, he must present to the head of the department in which his chief study has been a thesis which must embody some scholarly research on some topic connected with that study. The thesis shall be typewritten, on "hickory bond" paper, of twenty pounds' weight to the ream; the paper to be cut to the size of eight inches by ten inches. One and one-half inches margin must be left on the left side of the paper, for convenience in binding.

Engineering Degrees.

Graduates in engineering of this University, and masters of science who have received their degrees through the Graduate Faculty, are eligible to the professional degrees of civil engineer, electrical engineer, mechanical engineer, mining engineer, or chemical engineer, whichever is appropriate to the undergraduate course taken. Candidates for these degrees must have spent at least three years' actual time in professional practice, in positions of responsibility, in the design, construction or operation of engineering works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

They must submit an engineering thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of their own work or observation. If approved, the thesis and all accompanying material shall be the property of the University.

All theses for any professional degree must be delivered to the Dean of the School of Engineering on or before the 15th day of May.

Fees and Expenses.

There is no tuition in the Graduate School. According to a recent act of the state legislature, an incidental fee of ten dollars is charged students of this school. Students who matriculate for the first time pay five dollars additional. The other expenses of students differ according to circumstances, but may be brought within

a small amount. There are many opportunities in Lawrence for students to earn part or all of their expenses while attending the University. Not a few students do light housekeeping, and thus provide for themselves at a moderate expense. A full statement in regard to general expenses will be found under the College of Liberal Arts and Sciences, on another page of this catalogue.

Graduate School Organizations.

The Graduate Club.—This is an organization composed of the graduate students of the University, designed especially to bring this class of students, each of whom is largely working independently, into closer touch socially and intellectually.

Other Organizations.—Students of the Graduate School are also eligible to membership in other organizations of the University, such as the literary societies, the modern language and science clubs, etc., a full account of which will be found on pages 45–48 of this catalogue.

Seminars and Conferences.

The seminars of the Graduate School are also open under certain conditions to undergraduates pursuing advanced work.

American History.—The seminar in American history meets once a week for research work in some phase of American history.

European History. The seminar in European history is held once in two weeks. Some period of European history is selected for consideration.

German. The meetings average once a week during the year and advanced work is assigned and reported on.

Zoology. The meetings average once in two weeks, and problems in heredity are under consideration during the present year.

Bacteriology. The students in bacteriology have special meetings once a week.

Sociology and Economics Conference. A general conference, open to graduate students, for the discussion of topics in economics, meets once each week.

Seminar Rooms.

The Spooner Library is well furnished with facilities for seminar and departmental work. Separate rooms for seminar work are provided in Latin, German, philosophy, English literature and language, mathematics, European and American history. The entire

upper floor of the library, outside of the stacks, is given up to the departmental libraries, economics, sociology, American and European history. The seminar work in science is done in the buildings devoted to the work of the separate departments.

Fellowships.

For the encouragement of advanced study and research, nine teaching fellowships have been established for graduates of special merit. Each fellowship entitles the holder to \$215. Holders of such fellowships are obliged to teach not more than seven hours a week in the respective departments in which they are chosen. The remainder of the time shall be devoted to investigation and research leading to an advanced degree.

These fellowships are awarded to graduates of the University of Kansas, and of other colleges and universities of good standing, who have distinguished themselves for special scholarship and marked ability. Applications for fellowships must be filed, on blanks provided for the same, with the Chancellor of the University, on or before the 15th of May of the collegiate year preceding that during which the fellowship is held. Such application may be accompanied by recommendations from instructors, and original work of the applicant, either published or in manuscript.

The relative merits of applicants shall be considered by a committee composed of the members of the administrative committee of the Graduate School and the heads of the departments in which the fellowships are granted. The committee, after a full consideration of the merits of all applicants, shall nominate the candidates and recommend the same to the Regents for election.

The Board of Regents will determine each year the departments in which fellowships shall be granted. All fellowships will be filled each year. Fellows may be reelected, in special cases, for one additional year only.

For the year 1904-'05 fellowships will be awarded in the following subjects: German, mathematics, education, sociology, Romance languages, English language, chemistry, American and European history.

Departments.

The following groups of departments offer graduate work in the University. In some of them the facilities are adequate for thorough training for the doctor's degree. In all of them the facilities are excellent for work leading to the master's degree. See headings (enumerated below) on other pages of this catalogue. (See index.)

1. English Literature and Language.
2. Modern European Languages and Literature.

3. Classical Languages and Literatures.
4. History and Government.
5. Sociology and Economics.
6. Philosophy and Psychology.
7. Physical Sciences: Physics, chemistry, geology, anatomy, physiology.
8. Biological Sciences: Botany, zoölogy, entomology, organic evolution.
9. Mathematics and Astronomy.
10. Engineering.
11. Education.
12. Physical Education.

Courses for Graduate Instruction will be found in detail under courses of instruction for the College of Liberal Arts and Sciences and the School of Engineering.

II. The College of Liberal Arts and Sciences.*

Faculty.

FRANK STRONG, Ph. D., President.

OLIN TEMPLIN, A. M., Dean. Professor of Philosophy.

GEORGE O. FOSTER, A. B., Secretary.

FRANCIS H. SNOW, Ph. D., Professor of Organic Evolution and Systematic Entomology.

EPHRAIM MILLER, Ph. D., Professor of Mathematics and Astronomy.

WILLIAM H. CARRUTH, Ph. D., Professor of Germanic Languages and Literatures.

FRANK O. MARVIN, A. M., Professor of Civil Engineering.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.

LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.

LUCIEN I. BLAKE, Ph. D., Professor of Physics and Electrical Engineering.

LEWIS L. DYCHE, M. S., Professor of Systematic Zoölogy.

FRANK W. BLACKMAR, Ph. D., Professor of Sociology and Economics.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

FRANK H. HODDER, Ph. M., Professor of American History and Administration.

ERASMUS HAWORTH, Ph. D., Professor of Physical Geology and Mineralogy.

ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.

WILLIAM C. STEVENS, M. S., Professor of Botany.

ARVIN S. OLIN, A. M., Professor of Education.

WILLIAM A. GRIFFITH, Professor of Drawing.

EUGÉNIE GALLOO, A. M., Professor of Romance Languages and Literatures.

* Hereafter the College of Liberal Arts and Sciences will be referred to as the College.

WILBUR C. ABBOTT, B. Litt., Professor of European History.

CHARLES S. SKILTON, A. B., Professor of Musical Theory, History of the Fine Arts, and Organ.

HENRY B. NEWSON, Ph. D., Associate Professor of Mathematics.

JAMES NAISMITH, M. D., Associate Professor of Physical Education.

MARSHALL A. BARBER, A. M., Associate Professor of Cryptogamic Botany and Bacteriology.

SAMUEL J. HUNTER, A. M., Associate Professor of Entomology.

EDWARD BARTOW, Ph. D., Associate Professor of Chemistry.

IDA H. HYDE, Ph. D., Associate Professor of Physiology.

MILES W. STERLING, A. M., Associate Professor of Greek.

RAPHAEL D. O'LEARY, A. B., Associate Professor of English.

CLARENCE E. MCCLUNG, Ph. D., Associate Professor of Zoölogy.

HUGO DIEMER, M. E., Associate Professor of Mechanical Engineering.

GEORGE H. HOXIE, M. D., Associate Professor of Anatomy.

WILLIAM W. LAWRENCE, Ph. D., Associate Professor of English Literature.

HANNAH OLIVER, A. M., Assistant Professor of Latin.

MARTIN E. RICE, M. S., Assistant Professor of Physics and Electrical Engineering.

ELMER F. ENGEL, A. M., Assistant Professor of German.

ARCHIBALD HOGG, A. B., Assistant Professor of Philosophy.

HAMILTON P. CADY, Ph. D., Assistant Professor of Chemistry.

RALPH W. CONE, A. M., Assistant Professor of Sociology and Economics.

GEORGE L. LINCOLN, A. M., Assistant Professor of French.

WILLIAM C. HOAD, B. S., Assistant Professor of Civil Engineering.

ALBERTA L. CORBIN, Ph. D., Assistant Professor of German.

ALMA LE DUC, Ph. B., Assistant Professor of French and Spanish.

JOHN N. VAN DER VRIES, Ph. D., Assistant Professor of Mathematics.

EDGAR G. FRAZIER, Ph. B., Assistant Professor of Public Speaking.

FREDERIC N. RAYMOND, A. M., Assistant Professor of English.

MARGARET LYNN, A. M., Assistant Professor of English.

FRANK E. BRYANT, A. M., Assistant Professor of English.

CARL L. BECKER, B. L., Assistant Professor of European History.

RALPH E. BASSETT, A. M., Assistant Professor of Romance Languages.

DAVID F. MCFARLAND, M. S., Assistant Professor of Chemistry.

ARTHUR J. BOYNTON, A. M., Assistant Professor of Sociology and Economics.

CHARLES H. ASHTON, A. M., Assistant Professor of Mathematics.

MAULSBY W. BLACKMAN, A. M., Instructor in Zoölogy.

MARGUERITE E. WISE, A. B., Instructor in Botany and Entomology.

ERICH MUENTER, A. B., Instructor in Germanic Languages.

A. FREMONT HENDRIX, A. M., Instructor in Latin.

ELISE NEUENSCHWANDER, A. B., Instructor in French.

MARY C. FISH, Instructor in Physical Education.

ULYSSES S. G. PLANK, B. S., Assistant in Physical Education.

CARL F. GUSTAFSON, A. M., Assistant in Chemistry.

ELMER V. MCCOLLUM, A. B., Laboratory Assistant in Chemistry.

LULU GARDNER, Assistant in Rhetoric.

LARRY M. PEACE, A. B., Preparator in Botanical Laboratory.

Courses Offered.

The College offers the courses in literature, science and the arts that provide the so-called liberal education, and leaves in the main the applied science and arts to other departments. It is administered so that the required work for entrance and during Freshman and Sophomore years shall result in the student's having had a minimum number of courses in the fundamental branches of knowledge on which he will base his broader and more specialized work of the Junior and Senior years.

Degrees.

The courses of study in the College lead to the degree of bachelor of arts.

Students who elect subjects in the School of Law receive the degree of bachelor of arts in law. Those who elect subjects in the School of Medicine receive the degree of bachelor of arts in medicine. Students taking work in the department of education receive a teacher's diploma. (Consult index.)

Admission.

There are two methods of admission to the College of the University: First, by examination; second, by certificate.

1. By Examination.

Times and Place. Candidates for admission to first-year work in the College of the University, not presenting the required certificates, will be examined at the University, Lawrence, either on Thursday, Friday, and Saturday, June 2, 3, and 4, 1904, or on Wednesday, Thursday, and Friday, September 7, 8, and 9, 1904. The following is the schedule of examinations in June and September:

Thursday, June 2, or Wednesday, September 7.

9-10. English.	1-2. Physical geography.
10-11. Algebra.	2-3. German.
11-12. French.	3-4. Economics.

Friday, June 3, or Thursday, September 8.

9-10. Geometry.
10-11. Latin.
11-12. History.
2-3. Greek.
3-4. Physics.

Saturday, June 4, or Friday, September 9.

8-9. Botany.
9-10. Chemistry.
1-2. Zoölogy.
2-4. Free-hand drawing.

Candidates for admission may divide the examination between two years, or between June and September of the same year, under the following conditions: The applicant may present himself at the preliminary for examination in any or all of the prescribed subjects, and, if he is successful in five or more subjects, he need not be again examined in them.

Examinations for advanced standing on work done in preparatory schools, not required for admission, will be held at the same time as entrance examinations above.

2. By Certificate.

Nearly all students enter the College by certificate from high schools, academies, preparatory schools of other colleges and universities, or from military schools accredited by the University.

The candidate for admission by certificate must present either a

certificate of graduation from his high school or other preparatory school, or a letter from the principal recommending him for admission without graduation from the high school or other preparatory school. The certificate should be signed by the principal of the school, the superintendent of schools, or other authorized school officer. Blank certificates will be sent by the Registrar of the University about May 1 of each year to the principal of each accredited school. The certificates of all expecting to enter the College of the University should be filled out, signed and returned by the principal or other school officer to the Registrar before the end of the University year.

Blank certificates may be obtained by individual students of the Registrar of the University when not otherwise obtainable.

Method of Accrediting.

The method of accrediting to the College of the University is in subject or unit method. The subject (like algebra, for example) running one year, *i. e.*, thirty-five weeks, five recitations per week, with at least forty minutes for each recitation, constitutes one "entrance unit."

Number of Units Required.

Beginning with September, 1904, fifteen units will be necessary for admission to the College. The temporary deficiency, however, of not more than three units will be permitted, but the deficiency in any group given below must not exceed one unit. A student thus conditioned must make good all of his deficiencies during his first year in the University. Deficiencies thus made good do not count as College work. Thus, students from three-year accredited high schools may be admitted to the College with the conditions already shown.

Making Up Deficiencies.

In making up deficiencies at the University, a College unit, *i. e.*, five hours a week for a half-year (one term), is considered equivalent to an entrance (or high school) unit, *i. e.*, five times a week for a year.

College Credit.

College credit for work done in preparatory schools will be given upon examination only. (See page 66 for times and place of examination.)

Subjects for Admission.

The subjects from which entrance work may be offered, together with the number of units, are arranged in six groups, as follows; a total of fifteen units must be offered:

GROUP I, English.	{ English, three units.	{ All the English units are required.
GROUP II, Mathematics.	{ Algebra, one and one-half units. Plane geometry, one unit. Solid geometry, one-half unit.	{ The algebra, one and one-half units, and plane geometry, one unit, are required.
GROUP III, Foreign Languages.	{ Latin, four units. Greek, three units. German, three units. French, three units.	{ Of these, three units are required, which must be, first, in Latin, or, second, in German, if German has been approved by the high-school visitor.
GROUP IV, Physical Sciences.	{ Physical geography, one unit. Physics, one unit. Chemistry, one unit.	{ One unit is required.
GROUP V, Biological Sciences.	{ Botany, one unit. Zoölogy, one unit.	{ One unit is required.
GROUP VI, History.	{ Greek and Roman, one unit. Mediæval and modern, one unit. English, one unit. American, one unit. Economics, one unit.	{ One unit is required.

As observed above, to secure unconditional admission to the Freshman class of the College the candidate must offer fifteen units from the foregoing list of accredited preparatory subjects. Of these fifteen units, eleven and one-half are prescribed by group; the remaining units may be any in the list. The eleven and one-half prescribed units must include three units of English, two and one-half units of mathematics, three units of language, and one unit each from the groups of physical science, biological science, and history.

In view of the difficulty some preparatory schools may have in expanding their courses of study so as to include all the prescribed units, until further notice candidates will be admitted unconditionally who offer fifteen units from the foregoing list, although some of the prescribed units may not have been completed. Such postponement of the completion of preparatory requirements is possible only in those subjects in which elementary courses are offered in the College.

They include all the subjects in the list of preparatory studies except three units of English, two units of Latin, two and one-half units of mathematics, physical geography, and American History.

Students who take advantage of this privilege of postponing prescribed entrance requirements must make good such deferred requirements during their first year in the College. A course so taken during the Freshman year not only satisfies the entrance requirements, but also counts as regular College work.

It is hoped that within a reasonable time all Kansas high schools will be able so to arrange their courses of study as to meet all the entrance requirements of the University.

Candidates who have wholly or partially completed their preparation in accordance with the system of entrance requirements previously in operation will be given due credit, as if no change in requirements had been made.

Entrance Subjects in Detail.

English. Three units.

The requirement in English is that agreed upon by a joint committee of colleges and secondary schools and now uniformly accepted by all colleges in the United States. Of this requirement, the following is a general definition:

"I. Reading. A certain number of books will be set for reading (see list subjoined). The candidate will be required to present evidence of a general knowledge of the subject-matter and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics to be chosen by the candidate from a considerable number—perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the book. In preparation for this part of the requirement, it is important that the candidate shall have been instructed in the fundamental principles of rhetoric.

"II. Study and Practice. This part of the examination presupposes the thorough study of each of the works named in this division. The examination will be upon the subject-matter, form, and structure. In addition, the candidate may be required to answer

questions involving the essentials of English grammar and on the leading facts in English literary history to which the prescribed texts belong.

"*Note.*—No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, idiom, or division into paragraphs."

The books recommended for use in each of the preceding divisions are as follows:

I. For Reading. For 1904 and 1905: Shakspeare's *The Merchant of Venice* and *Julius Cæsar*; *The Sir Roger de Coverley Papers* in the *Spectator*; Goldsmith's *The Vicar of Wakefield*; Coleridge's *The Ancient Mariner*; Scott's *Ivanhoe*; Carlyle's *Essay on Burns*; Tennyson's *The Princess*; Lowell's *The Vision of Sir Launfal*; George Eliot's *Silas Marner*. For 1906, 1907, and 1908: Shakspeare's *The Merchant of Venice* and *Macbeth*; *The Sir Roger de Coverley Papers* in the *Spectator*; Irving's *Life of Goldsmith*; Coleridge's *The Ancient Mariner*; Scott's *Ivanhoe* and *The Lady of the Lake*; Tennyson's *Gareth and Lynette*, *Lancelot and Elaine*, and *The Passing of Arthur*; Lowell's *The Vision of Sir Launfal*; George Eliot's *Silas Marner*.

II. For Study and Practice. For 1904 and 1905: Shakspeare's *Macbeth*; Milton's *Lycidas*, *Comus*, *L'Allegro*, and *Il Penseroso*; Burke's *Speech on Conciliation with America*; Macaulay's *Essays on Milton* and on Addison. For 1906, 1907, and 1908: Shakspeare's *Julius Cæsar*; Milton's *Lycidas*, *Comus*, *L'Allegro*, and *Il Penseroso*; Burke's *Speech on Conciliation with America*; Macaulay's *Essay on Addison* and *Life of Johnson*.

The work indicated in the preceding statements is intended to occupy three years of a high-school course, five recitations weekly; and it is intended that teachers shall be left free to secure the indicated results in whatever way may prove most suitable, and, in particular, to substitute for the books named others of equivalent literary value and of similar types, or to add others to the list. Hence, it is impracticable to prescribe or to define precisely what should be done in any one year or in any one term; but a few suggestions may be made, to be followed at discretion.

It is preferable to carry on the subjects side by side, in the proportion of two recitations a week devoted to composition, grammar, and rhetoric, to three devoted to literature; the study of composition to include the writing of one or two exercises every week, and the discussion of these exercises to be made the means of reviewing the principles of grammar as well as those of rhetoric; text-books to be used chiefly for reference, if at all.

Grammar.—If students do not enter the high school with such a practical knowledge of grammar as will enable them, on occasion, to name and classify parts of speech, explain the structure of sentences, and state and apply principles, the subject should be further studied in connection with the work in composition, and, if necessary, there may be a brief formal review at some stage of the high-school course.

Composition and Rhetoric.—The text-book in rhetoric is to be regarded merely as an aid in the study of composition and of literature. Exercises in composition should be oral as well as written, and should be continuous through the high-school course. Subjects should be derived partly from the literature read by the class and partly from the student's own observation and experience. The order of advance may be: First, stories; the finding and shaping of descriptive and narrative material in easy, spontaneous expression. Second, essays; study of theme, plan, and paragraph. Third, the general principles of style; the sentence and the word. Fourth, the general principles of form—narrative and descriptive, expository and argumentative.

Literature. Text-books in history, biography and criticism are merely incidental aids in the study of classics, and, like those in rhetoric, should rarely, if ever, be made subjects of formal recitation, except in reviewing. It is desirable that, of the books read in the high-school course in literature, those of modern authors shall be taken up first, and that the order of types shall be such as will co-ordinate the study with that of composition. American literature, if included, should precede English, and the prose of any period should precede its verse. Reading done at home should be preceded and followed by class discussions and reports. At the end of the course there should be a chronological review, with a good text-book, of all the work that has been done, with a brief survey of earlier periods.*

The books named in the preceding standard lists may be tentatively arranged by years in the order following, and the study of composition coordinated as shown. The earlier reading will be more rapid, the later more critical.

First Year.

Literature—in class.—Silas Marner, in part, or general survey and class discussion; Vision of Sir Launfal; Essay on Addison; Essay on Milton.

*Further and more detailed suggestions with reference to the teaching of all subjects named may be found in the University Handbook on the Teaching of English, by Prof. E. M. Hopkins. Sent to any address upon receipt of five cents, to pay postage.

Partly out of class.—Silas Marner, completed; Ivanhoe; The Princess; The Ancient Mariner; Essay on Burns. (Changes, additions or omissions at discretion.)

Composition.—Finding and shaping of material; stories, essays, paragraphs, letters, etc.

Second Year.

Literature.—Speech on Conciliation; Vicar of Wakefield, in part, noting peculiarities of eighteenth-century style; minor poems of Milton; Vicar of Wakefield, completed; Sir Roger de Coverley Papers. (Other books at discretion.)

Composition.—The principles of style; sentences, words, phrase, etc.

Third Year.

Literature.—Macbeth; general review; Merchant of Venice; Julius Cæsar. (Other books at discretion; *e. g.*, Bunyan, Bacon, selections from English Bible.)

Composition.—The forms of discourse; general principles of narration and description, exposition and argument.

Mathematics. Four units, of which two and one-half are required.

It is assumed that all candidates for admission to the University are proficient in the practical applications of arithmetic. The University recommends that the arithmetic in the upper grades be made more algebraic in character or that some elementary algebra be taught in the grades in the place of some of the more abstract topics in arithmetic. It also recommends that concrete geometry, under its own name or under the name of geometrical drawing, be taught in the grades.

The University puts itself in line with the best mathematical thought of the day by making its entrance requirements in mathematics approximate as nearly as possible to the common standards agreed upon by the best colleges and universities of the country. These common standards are the recommendations of the committee of the American Mathematical Society, in cooperation with committees appointed by the Society for the Promotion of Engineering Education and the National Educational Association, on definitions of college entrance requirements in mathematics.

In harmony with these recommendations, the student must offer a minimum of two and one-half units, and may offer a maximum of four units in mathematics, in five subjects, as follows:

Elementary Algebra. One and one-half units. The required one and one-half units of algebra shall consist of the four fundamental operations of algebra: factoring; determination of highest common

factor and lowest common multiple by factoring; fractions; simple equations, both numerical and literal; simultaneous equations, both numerical and literal, containing two and three unknown quantities; radicals, including the extraction of the square root of polynomials and of numbers; exponents, including fractional and negative; quadratic equations, in one and two unknown quantities, both numerical and literal; ratio and proportion; binomial theorem for positive integral exponents; formulas for the n th term and the sum of the terms of arithmetic and geometric progressions, with applications.

Throughout the course the pupil should be required to solve numerous problems which involve putting questions into equations. Some of these problems should be chosen from mensuration, from physics, and from commercial life. The use of graphical methods and illustrations, particularly in connection with the solution of equations, is also expected. The same credit will be given for the work if done partly in the grades and partly in the high school or if done wholly in the high school.

Plane Geometry. One unit. The usual theorems and constructions of good text-books, including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle. The solution of numerous original exercises, including loci problems, and the application to the mensuration of lines and plane surfaces is strongly insisted on. The first five books of Wentworth's *Geometry* (or an equivalent) will be accepted. This unit is required.

Solid Geometry. One-half unit. The usual theorems and constructions of good text-books, including the relations of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders, and cones; the sphere and the spherical triangle; numerous original exercises, including loci problems and applications to the mensuration of surfaces and solids.

Plane Trigonometry. One-half unit. Definitions and relations of the six trigonometric functions as ratios; circular measurement of angles; proofs of principal formulas, in particular for the sine, cosine and tangent of the sum and difference of two angles, of the double angle and the half angle, the product expressions for the sum or the difference of two sines or of two cosines, etc.; the transformation of trigonometric expressions by means of these formulas; solution of trigonometric equations of a simple character; theory and use of logarithms (without the introduction of work involving infinite series); solution of right and oblique triangles and practical applications. Problems should be solved by the use of tables of

natural functions and also by use of tables of logarithms and logarithmic functions.

Advanced Algebra. One-half unit. Permutations and combinations, limited to simple cases; complex numbers, with graphic representation of sums and differences; determinants, chiefly of the second, third and fourth orders, including the use of minors and the solution of linear equations; numerical equations of higher degree, and so much of the theory of equations, with graphic methods, as is necessary for their treatment, including Descarte's rule of signs and Horner's method, but not Sturm's functions or multiple roots.

Most candidates prefer to offer three units of mathematics for entrance; these three units should consist of the two and one-half units of required algebra and plane geometry and one-half unit of solid geometry or plane trigonometry.

Latin. Three or four units.

First Unit. Beginner's Book. In the book adopted for high schools in this state at least the first 200 pages should be completed; more if possible. If any other book is used, the lessons should be accompanied from an early stage by the reading of simple selections; and, after the completion of the lessons, twenty to thirty pages of an easy text, such as Viri Romæ, should be read, if possible. In all written exercises the long vowels should be marked, and in all oral exercises pains should be taken to make the pronunciation conform to the quantities. Students should be taught from the beginning to read the Latin aloud with intelligent expression.

The important things in this year are: First, a perfect knowledge of the paradigms; second, some practice in reading easy connected passages in preparation for the second year's work.

Second Unit. The first four books of Cæsar's Gallic War, or selections from Cæsar equivalent in amount to those books; and the equivalent of one period a week in prose composition. Selections from other prose writers, such as Nepos, may be taken as a substitute for one book of Cæsar, or an equivalent amount may be read in any of the "second-year books," provided at least two books of Cæsar are included.

The important things in this year are: First, a systematic drill on the more common case and mode uses; second, an intelligent comprehension of the matter read. The student should be able to give a good account of any of Cæsar's campaigns.

Third Unit. Six orations of Cicero, and the equivalent of one period a week in prose composition. The orations should include the four against Catiline and the Manilian Law. Sallust's Catiline may be substituted for the Manilian Law and a sixth oration.

The important things in this year are: First, a systematic drill in all Ciceronian case and mode uses; second, an intelligent comprehension of the contents of the orations.

Fourth Unit. The first six books of Vergil's *Æneid*, and the equivalent of one period a week in prose composition. An equivalent amount of Ovid may be substituted for part of the Vergil.

The important things in this year are: First, an intelligent appreciation of Vergil's story and art; second, a training in reading the meter which will allow the student to read the Latin metrically with ease and expression; third, a study of the mythology. If the work of the first three years has been done well, syntactical drill should be confined almost wholly to the period devoted to prose composition.

Note.—When only three units are presented, it is preferred that they be the first, second, and third; but the first, second and fourth will be accepted. No combination of Cicero and Vergil will be accepted as a unit.

Latin Prose Composition. It will be noticed that prose composition is required throughout the last three years. One period a week may be devoted to it, or a smaller amount may be given each day. Such books as Bennett's and Jones's are recommended as giving the more systematic drill, but they should be supplemented by the occasional dictation of connected passages based on the text read. Such books as Daniell's and Moulton's will be accepted, but they need to be supplemented by a systematic study of the grammar.

Greek. One, two or three units.

First Unit. Elementary Greek. White's First Greek Book or Gleason and Atherton's First Greek Book, or an equivalent. Thorough mastery of declensions and conjugations, and the main ideas of syntax. Xenophon's *Anabasis* begun, and twenty to thirty pages read. Goodwin's, Babbitt's or Goodell's Greek Grammar.

Second Unit. Xenophon's *Anabasis* continued into or through the fourth book, or an equivalent amount of other Attic prose. Review of inflections. Systematic study of syntax in the grammar. Practice in writing Greek based on the text read. Constant training in sight-reading.

Third Unit. Homer's *Iliad* or *Odyssey*, five to six books, exclusive of the Catalogue of Ships. Constant practice in reading at sight. Special attention to Homeric forms, vocabulary, and scansion. Attic prose composition once a week. Seymour's School *Iliad*. Perrin and Seymour's School *Odyssey*.

German. One, two or three units.

First Unit. The elements of grammar (the first twenty-four lessons of Otis's Essentials of German Grammar, or part I of Joynes-Meissner), including: (1) Careful drill in pronunciation; (2) familiarity with German script and text; (3) the memorizing of paradigms; (4) the writing, correction, memorizing and reciting after correction of all the English-German exercises in one of these grammars; (5) colloquial exercises daily to illustrate and fix the principles and the vocabulary introduced; (6) the memorizing of 100 lines of good German (popular songs or narrative prose). One-half year.

The reading and translation of about seventy-five pages of simple German (as in Huss, Hewett, Joynes-Meissner, Brandt Readers). This reading should involve the reading aloud of the German, the rendering into good idiomatic English, and question and answer in German upon what is read. Word-for-word translation should not be permitted, save when necessary to show the precise force of an idiom. One-half year.

The above work will require, if properly done, five forty-five-minute periods weekly for thirty-five weeks. A wise plan is to begin with the grammar and carry this continuously for five or six weeks. Then introduce the reader; at first, one lesson a week, and then, after ten or twelve weeks, increasing the number of lessons from the reader until the grammar lessons have been completed and thoroughly reviewed.

Second Unit. Additional study of grammar, directed to the details of case government, use of the modal auxiliaries, of the subjunctive, and of word order. (The equivalent of lessons XXV to XXXVII in Otis's Essentials, or of part II in the Kansas edition of Joynes-Meissner.) Practice in writing German from dictation, at least eighteen exercises (one a week for a half-year, to occupy fifteen to twenty minutes each).

Reading and translation of 100 pages of connected prose and of Schiller's Wilhelm Tell, complete. The 100 pages of prose may be made up from the remainder of Brandt's or Hewett's Reader, the completion of Huss or Joynes-Meissner together with Zschokke's Der Zerbrochene Krug, Heyse's Die Blinden or Anfang und Ende, Storm's Immensee, Andersen's Maerchen, Grimm's Maerchen.

Third Unit. Review of grammar, with drill on the less usual strong verbs and on the idioms of tense and order. Composition work, consisting chiefly of paraphrases of the German used for translation.

Reading of 400 pages of standard German, with careful translation and critical understanding. (Some portion of what is translated should always be read aloud in German.) Suitable works are: Frey-

tag's *Die Journalisten* and Lessing's *Minna von Barnhelm*; Fouque's *Undine*; Hauff's *Das kalte werz*; Schiller's *Der dreissigjährige Krieg*; Freytag's *Doktor Luther*; Riehl's *Burg Neideck*; Goethe's *Hermann und Dorothea*.

French. One, two or three units.

First Unit. Rudiments of grammar; conjugation of the regular and the more usual irregular verbs; moods and tenses; use and positions of pronouns; partitive constructions. Careful drill in pronunciation. Reading of 100 pages of easy prose. Practice in writing and speaking very simple sentences.

Second Unit. All the essentials of accidence and syntax. Composition. Frequent dictation. Oral exercises. Reading of 300 to 350 pages of modern French.

Third Unit. Thorough review of grammar. Written exercises based upon grammatical points, and connected writing. Dictation. Practice in hearing and speaking French. Reading of 600 pages of fairly difficult modern French.

Physical Geography. One unit.

The course in physical geography should include a study of the following subjects:

1. The earth as a globe; shape of the earth, how proved; size, how measured; motions, how determined; map-making; different modes of projection.

2. The ocean; forms and divisions, depth, density, temperature; ocean movements, waves and currents; character of ocean floor; life in ocean; tides, character and causes; shore lines.

3. The atmosphere; chemical composition and how determined; pressure of, and how determined; circulation of, character and cause; storms, classification of, and cause.

4. Land, amount and distribution of; topographic charts; plains, kinds of, and development of; plateaus, kinds of, and development of; volcanos, distribution and character of; rivers, life-history of; glaciers, kinds and characteristics of.

Physics. One unit.

The candidate's preparation in physics should include:

1. Recitations on at least one standard text, such as Carhart and Chute's *High-school Physics*, Wentworth and Hill's *Text-book of Physics*, or *Student's Manual of Physics* by L. C. Cooley.

2. Experimental work, consisting of lecture-table demonstrations and individual laboratory work. The latter should comprise at least thirty-five exercises selected from such lists as are given in *Laboratory Manual of Physics*, by Cheston-Dean-Timmerman, or Cooley's *Manual*, mentioned above.

Chemistry. One unit.

Preparatory work in this subject should cover practically the work done in course I in the University. The student should have a good knowledge of (1) modern chemical theories; (2) the most important facts of chemical science; (3) the practical applications of chemistry to every-day life and to the useful arts. It is important that elementary physics be thoroughly understood before taking up the study of chemistry. About two-fifths of the time devoted to chemistry should be spent in actual laboratory work by the students individually, and it is not sufficient if the instructor performs the experiments in the presence of the class. Any good text-book, such as Remsen's *Introduction to the Study of Chemistry* (sixth edition), Newth's *Inorganic Chemistry*, or *Introduction to General Chemistry*, by H. C. Jones, may be used. Some of the abridged text-books are too elementary to fulfil the requirements of the University.

Botany. One unit.

A unit's course in botany should essentially follow the outline recommended in the *Proceedings of the Seventh Annual Meeting of the North Central Association of Colleges and Secondary Schools*. Detailed directions for such a course are given in Ganong's *The Teaching Botanist*, Stevens's *Introduction to Botany*, and Bergen's *Foundations of Botany*. Not less than two-thirds of the time should be devoted to laboratory work, and the remainder to recitations and discussions. Field excursions should be made, so that the students may know in their natural surroundings the plants already studied in the laboratory. Careful drawings and notes should be required in connection with the laboratory work.

Zoology. One unit.

Acceptable work in zoölogy must be of such a character that at least two-thirds of the time is spent in individual study of type specimens. The value of the study rests in the training given in independent observation and correlation of facts, and in the accurate recording of these facts by drawings and notes. Comparative work is of the greatest importance. The arthropods are the best group in Kansas upon which to work, and it is suggested that they be used to exemplify the general principles of structural relations and classification. For a laboratory guide, Marshall and Hurst's *Practical Zoölogy* is recommended, and as a text-book, Parker and Haswell's *Manual of Zoölogy*. Where much of the time is devoted to the study of insects, Hunter's *Elementary Studies in Insect Life* may be used as a guide, and Comstock's *Manual of Entomology* and Weed's *Life-histories of American Insects* as reference books.

Greek and Roman History. One unit.

An amount of work equivalent to the texts of Wulfson, West, Myers, or, where Greek and Roman history are taught separately, Botsford or Morey.

English History. One unit.

An amount of work equivalent to the texts of Larned, Coman and Kendall, or Montgomery, Channing and Higginson.

It is expected of all students that they shall have had, in addition to the work in the text-book, adequate preparation in geography, and a certain amount of reference work, outside reading, and note-taking.

Note.—The American Historical Association, through the report of its Committee of Seven, various local associations, through concurrent reports, and most universities and colleges have recommended the following course of study in history for all secondary schools:

First year.—Ancient history to 800 A. D.

Second year.—Mediæval and modern European history.

Third year.—English history.

Fourth year.—American history and civil government.

This plan is strongly recommended to the schools sending students to the University of Kansas. Units of this scheme will be accepted for entrance by the department of European history when offered by entering students, and it is hoped and expected will replace all other requirements as soon as practicable.

American History. One unit.

This is the course recommended by the Committee of Seven of the American Historical Association in their report on the study of history in schools. In order to receive entrance credit, the course must not be given before the third year in the high school, and must be based upon some such approved text as Channing's *Student's History of the United States* or McLaughlin's *History of the American Nation*.

Economics. One unit.

The general principles of economic science, with some of its applications. The instructor should approach, as far as possible, the subject from the concrete rather than from the abstract, and should verify every principle by practical examples. Blackmar's *Economics* (or its equivalent) should be used as a text and guide. Special attention should be given to books II and III. Chapters II and III of book I, and chapters I, II and III of book III, require special analysis by the instructor.

A limited amount of collateral reading should be required, and easy investigations of local economic conditions should be advised.

Admission to Advanced Standing.

The regulations governing admission to advanced standing in the College are generally applied through the medium of a special committee of the faculty which examines into the merits of each case presented to it and either credits the applicant with a certain rank, or recommends him to the heads of departments for advanced credit.

Application for such advanced standing must be made at the time of matriculation.

Undergraduates from other colleges must present certificates of honorable dismissal, or other satisfactory evidence of good character.

Some of the requirements of the College are indicated as follows:

I. By examination. A candidate may be admitted to the Sophomore, Junior or Senior class, if he appear on examination to be prepared in the following studies: (1) In the studies required for admission to the Freshman class. (2) In all such studies as he would have pursued if he had entered at the beginning of the course.

All applications for examination for advanced standing must be made during the opening week of the first term. College credit will be given for work done in preparatory schools upon examination only. The times and place of such examinations are the same as listed on page 66.

II. Without complete examination. Graduates or students from the higher classes of other colleges may be admitted to advanced standing upon the presentation of a certificate stating in detail the work done, under such conditions as the Faculty may determine to be just in each case, upon consideration of the applicant's previous course of study and of the evidence he presents of his proficiency in that course. For information on this subject, application should be made to the Registrar of the University.

It is required of all candidates for the bachelor's degree who have entered the University on advanced standing from other colleges that they do not less than six full courses of Junior or Senior work in residence at the University.

Students leaving the University before obtaining the bachelor's degree, who have spent three full years in residence at the University, and lack but three full courses of graduation, may receive not to exceed three full-course credits from an institution of equal standing, provided they receive the bachelor's degree or a higher degree from such institution.

Special Students.

Opportunity is given in the College for the admission of persons of mature years who desire to pursue some special line of work, without following any prescribed course or becoming candidates for a degree.

The admission of such special students is directly under the control of a committee of the faculty, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired and must also meet other requirements as fixed by the faculty.

Special students are subject to the same regulations as regular students with regard to the quality of work performed and attendance at recitations and examinations.

Registration and Enrolment.

All candidates for admission having high-school certificates, and all students of the College intending to pursue their studies in the ensuing year, must present themselves for registration at the University on September 7 to 10, inclusive, 1904. Registration at a later date will be permitted only on the presentation of a satisfactory reason for the delay.

The Dean of the College is charged with the execution of all University and Faculty rules relating to the enrolment of students in classes and their choice of studies.

Inadequate Preparation.

When students show by their current work insufficient entrance preparation in any study, they may be required to make good such deficiency in any manner prescribed by their instructors.

Rule Governing Number of Studies.

The faculty of the College have adopted the following rule governing the number of studies that students will be allowed to pursue at any one time:

In the College, a student may be enrolled in more or less than three full courses, or their equivalent, *only on the approval of the Dean.*

Grades and Failures.

Examinations are held at regular stated periods and at such other times as may be provided for by the regulations of the faculty. At the close of each term, a summary of the students' work is reported to the Registrar, for entry upon the general record. At the end of each half-year, the parent or guardian of each student, or the student, if requesting it, will be furnished a copy of the entries relating to that student.

Absence from examination or failure in more than one-third of his work, in any one term, severs a student's connection with the University.

Scholarships.

The following scholarships are offered to students in the College:

1. The Lucinda Smith Buchan Memorial Scholarship. Established by the alumnae members of the Pi Beta Phi sorority. A loan of \$200 for three years without interest. Open to young women of the Junior and Senior classes of the College.

2. The Marcella Howland Memorial Scholarship. Sixty dollars a year. Open to young women of the Junior and Senior classes of the College.

3. The Kansas City Branch of the Association of Collegiate Alumnae Scholarship. Two hundred dollars a year. Awarded to young women, who are chosen from graduates of the Kansas City high school. Held in 1903-'04 by Miss Irene Gilchrist, of Kansas City, Mo.

4. A research table in the Marine Biological Laboratory, at Woods Hole, Mass., supported by Mrs. Sara T. D. Robinson, is open to women of the University who have specialized in the sciences and given evidence that they are fitted to make the best use of it. Applications for the use of this table should be sent Mrs. Sara T. D. Robinson, Oakridge, Lawrence, Kan.

5. A research scholarship in systematic entomology is maintained by Prof. F. H. Snow. Two hundred dollars a year.

6. May Sexton Agnew Memorial Fund. A fund of \$500 has been given the library of the University by the Kappa chapter of Kappa Alpha Theta fraternity. The income of this fund is to be devoted to the purchase of books in English literature.

Teacher's Diploma.

The teacher's diploma of the University may be given to A. B., A. M. and Ph. D. graduates of the University on the following conditions:

1. *Special Knowledge.* The completion of at least four terms of College work in the subject, or the closely allied subjects, that the candidate proposes to teach; the ultimate decision as to the candidate's proficiency to rest with the head of the department in which the major work is taken.

2. *Professional Knowledge.* The completion of two and one-half terms' work in the department of education.

3. *Amount of Work Offered.* The candidate for the A. B. degree, who is at the same time a candidate for the teacher's diploma, shall be required to offer twenty-five terms of undergraduate work.

4. *Grade of Scholarship.* The teacher's diploma shall be granted only to graduates whose scholarship in the twenty-five

terms' work offered for the degree and the diploma averages as high as grade II.

On presentation of the University teacher's diploma, the State Board of Education will issue a three-year state teachers' certificate. At the expiration of the three-year certificate, a life certificate will be issued, if the candidate has taught successfully during two of the three years.

Expenses.

By legislative enactment, the following fees must be charged each student of the College of the University in lieu of all other fees of each school year, payable at time of matriculation:

Matriculation fee, payable but once.....	\$5.00
Incidental fee.....	10.00

To students residing in states or territories other than Kansas, the fee charged must be as follows:

Matriculation fee, payable but once.....	\$10.00
Incidental fee.....	40.00

Laboratory Supplies. All the laboratories of the University and their equipment of power engines, machinery, light, desks, tables, balances, microscopes, models and complete apparatus are at the disposal of students, under the direction of their instructors, free of cost. These desks, benches and tables will be further provided with individual sets of tools, sets of working apparatus and equipment, for which the student will be held responsible and expected to return in good condition. Students are requested to check these up at time of entering a laboratory course to see that they get all that are charged to them. At the end of the course, or at the discretion of the instructor, all the individual equipment in good order must be returned. Such as may have been lost, damaged, broken or destroyed by the student must be paid for by him at that time.

Material of every kind consumed, ground up or used in the manifold experiments and practices in laboratories must be paid for by the student, but may be secured where the student elects. Students providing themselves with the exact change may obtain this of the storekeeper in any quantity at the various department store-rooms at its cost. For the economic and prompt supply of such material, coupon books, good in all departments, are furnished at the business office in amounts of five dollars and two dollars. Any coupons unused are redeemable in cash at the Secretary's office at the end of the course.

Other Expenses. There are no dormitories connected with the University. Students find accommodations in the boarding-houses and homes in Lawrence. Information concerning the location of

rooming- and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at \$3.75 a week. Some persons who furnish plain rooms and good, plain food receive boarders at \$3 or even \$2.50 a week. Day board in private families and at city restaurants may be obtained for \$2.50 to \$3 a week. Day board in clubs varies from \$2.25 to \$3 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

The following table shows the estimated expenses of a student of the College for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends upon the tastes and habits of the student:

	<i>Low.</i>	<i>Average.</i>
Board.....	\$80.00	\$120.00
Room.....	20.00	30.00
Books and stationery.....	8.00	15.00
Laundry.....	8.00	20.00
Matriculation and } other fees	15.00	15.00
Incidentals.....	15.00	50.00
Totals.....	<u>\$146.00</u>	<u>\$250.00</u>

Self-help. Many students find work in private families, in offices, and in various occupations, by means of which they defray a portion of their expenses. Some students have earned their entire expenses while in attendance, and have made good records at the same time; other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they came. If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is comparatively easy for a young man to earn half his living while attending the University and yet do good work in his classes. The student should bring with him at least enough money to live comfortably for a few weeks, until he finds something to do. The University cannot guarantee work to any student, but will lend every possible assistance in finding employment. The University Christian Associations maintain employment bureaus, where the names of those seeking work and of those desiring workers are recorded. Students desiring places where they may help themselves are advised to apply to the University Y. M. C. A. or Y. W. C. A., or to the Registrar, University of Kansas, Lawrence.

Accredited Preparatory Schools.

Schools printed in *italics* offer courses of study which meet all the requirements for admission to the Freshman class of the College.

Schools not printed in *italics* fall short of full preparation by not more than three units.

<i>Name of high school.</i>	<i>Superintendent.</i>	<i>Principal.</i>
<i>Abilene</i>	W. B. Hall.....	B. C. Biggart, A. B.
<i>Albuquerque, N. M.</i>	A. B. Stroup.....	J. A. Miller.
<i>Argentine</i>	H. P. Butcher, A. B.....	Frank Agrilius.
<i>Arkansas City</i>	W. M. Fisher, A. M.....	Helen Moffet, A. B.
<i>Atchison</i>	Nathan T. Veatch.....	A. H. Speer, A. B.
<i>Atchison Co., Effingham.</i>		John W. Wilson, A. B.
<i>Atwood</i>	H. W. Felter.....	H. W. Felter.
<i>Augusta</i>	Charles W. Pratt.....	Charles W. Pratt.
<i>Axtell</i>	R. E. Long.....	Avis Stanley.
<i>Belle Plaine</i>	C. O. Smith.....	Orrell McCroskey, A. B.
<i>Belleville</i>	J. C. Wright.....	H. J. Mummaw.
<i>Beloit</i>	C. A. Shively, A. B.....	C. E. Rose, A. B.
<i>Blue Mound</i>	A. S. Hiatt, A. B.....	A. S. Hiatt, A. B.
<i>Blue Rapids</i>	W. H. Andrews, A. B.....	Hazel Berry.
<i>Burlingame</i>	W. L. Holtz, A. B.....	Mrs. Eva Gill Clark, A. B.
<i>Burlington</i>	W. A. Stacey, B. S.....	Lulu M. Griggs, A. B.
<i>Burrton</i>	W. W. Willis.....	W. W. Willis.
<i>Carbondale</i>	C. A. Deardorff, M. E.....	Cora Silvernail, A. B.
<i>Centralia</i>	N. F. Daum, A. B.....	Jeanette Gordon, A. B.
<i>Chanute</i>	W. E. Royster.....	J. A. Cannon.
<i>Chase Co., Cottonwood Falls</i>		B. F. Martin.
<i>Cherryvale</i>	A. J. Lovett, A. M.....	C. A. Walker.
<i>Clay Co., Clay Center</i> ...		S. A. Bardwell.
<i>Clifton</i>	G. B. Buikstra, A. B.....	A. F. Harter, A. B.
<i>Coffeyville</i>	William M. Sinclair.....	Blanche Willis, Ph. B.
<i>Colony</i>	John B. White.....	John B. White.
<i>Concordia</i>	A. B. Carney.....	Benjamin R. Ward, A. M.
<i>Crawford Co., Cherokee,</i>		W. S. Pate.
<i>Decatur Co., Oberlin</i> ...		Harlan Q. Banta, A. M.
<i>Delphos</i>	Anna D. White, A. B.....	Lizzie S. Kilgore, A. B.
<i>Dickinson Co., Chapman</i>		Homer S. Myers, A. M.
<i>Dodge City</i>	C. A. Smith.....	Carl Miller.
<i>Downs</i>	B. K. Farrar, B. S.....	Mabel Nixon.
<i>El Dorado</i>	Ida C. Fleming.....	H. M. Cunningham.
<i>Ellsworth</i>	E. T. Fairchild.....	Daisy Zeiningger, A. B.
<i>El Reno, Okla.</i>	F. N. Howell, A. B.....	Blanche L. Miller, Ph. B.
<i>Elsmore</i>		Bessie G. Ryan.
<i>Emporia</i>	L. A. Lowther, A. B.....	J. H. Sawtell, A. B.
<i>Eureka (Southern Kansas Academy)</i>		J. W. Scroggs, A. M.
<i>Eureka</i>	B. E. Lewis, A. M.....	H. P. Study, A. B.
<i>Everest</i>		J. P. McCoy.
<i>Fort Scott</i>	D. M. Bowen, A. B.....	W. C. Lansdon, A. B.
<i>Frankfort</i>	M. G. Kirkpatrick.....	Harriet Landers.
<i>Fredonia</i>	H. S. McFadden.....	M. L. Lange, A. B.

<i>Name of high school.</i>	<i>Superintendent.</i>	<i>Principal.</i>
Galena	H. A. Higdon, A. B.	F. H. Barber.
Garden City	A. C. Wheeler	Nettie M. Lawrence, A. B.
Garnell	C. H. Oman, A. B.	G. F. Gorow.
Girard	H. W. Shideler, A. B.	Lillian Bell, A. B.
Gove Co., Gove City .....	.....	Stephen E. Lee.
Great Bend	Warren Baker	E. F. Ewing.
Gypsum .....	.....	A. R. Manning.
Halstead	J. L. Shearer, B. D.	F. W. Gruwell.
Herington	B. E. Ford, B. S.	Kate B. Miles.
Hiawatha	A. R. Williams, A. B.	F. M. Hammitt, A. B.
Hiawatha Academy .....	.....	G. A. Hoffman, A. M.
Holton	Erwin E. Heath, A. B.	E. W. Hosack.
Horton	J. O. Hall, A. B.	Inez M. Chapman, A. B.
Howard	Irwin Stimmel, Ph. B.	Elizabeth Leslie, A. B.
Humboldt	J. E. Cook	R. A. Coverdale.
Hutchinson	Richard R. Price, A. B.	C. W. Kline, A. B.
Iola	Clifford A. Mitchell	L. H. Wishard.
Joplin, Mo.	W. P. Roberts	L. L. Lichliter, A. M.
Junction City	W. S. Heusner, A. M.	C. A. Wagner, A. B.
Kansas City, Kan.	M. E. Pearson, B. D.	W. C. McCroskey, A. B.
Kan. City, Mo., Central, ...	J. M. Greenwood, LL. D. ..	I. I. Cammack.
Kansas City, Mo., Manual Training .....	.....	E. D. Phillips, A. M.
Kansas City, Mo., Westport .....	.....	S. A. Underwood.
Kingman	J. E. Boyer	G. I. Johnstone.
Kinsley .....	.....	D. A. Baugher.
Labette Co., Altamont .....	.....	W. M. Kyser.
La Crosse	Charles S. Robbins, A. M. ..	Chas. M. Robbins, A. M.
La Cygne	J. E. Chamberlain	Mabel M. Olin.
Larned	B. F. Ader	Etta Francis.
Lawrence	F. P. Smith, A. M.	F. H. Olney, A. B.
Leavenworth	George W. Kendrick	W. A. Evans.
Le Roy	W. W. Jones	G. E. Brown.
Lewis Academy, Wichita .....	.....	J. M. Naylor, Ph. D.
Lucas	F. E. Robinson, B. S.	Mrs. C. M. Robinson.
Lyndon	F. W. McCabe, A. B.	Lizzie Gernon, A. B.
Mankato	F. W. Simmonds, M. S.	R. V. Phinney.
Marion .....	.....	.....
Marysville	C. B. Myers, A. B.	A. J. Clark, A. B.
Medicine Lodge	A. B. Honnold, Ph. B.	Clara Richards, A. B.
Moline	Charles W. Pennel	A. O. Peery.
Montgomery Co., Independence .....	.....	S. M. Nees, B. S.
Moran	L. E. Bush	L. E. Bush.
Mound City	C. L. King	C. L. King.
McPherson	R. H. Killion, A. B.	Mame A. Curry.
Neodesha	John W. Brown	J. M. Steffen.
Newton	D. F. Shirk	Mrs. Alice Turner.
Norton Co., Norton .....	.....	W. G. Riste.
Nortonville .....	.....	W. A. Anderson.
Olathe	R. L. Parker, A. M.	Virginia McCrory, A. M.
Oklahoma City, Okla.	Ed. S. Vaught, B. S.	R. H. Ewing.
Onaga	J. P. Perrill, B. P.	Emma Schaich, A. B.
Osage City	J. T. Albin, A. M.	E. C. Harkney.
Osawatomie	R. Rankin	Beulah S. Roberts, A. B.
Osborne	C. N. Poe, A. M.	Ora Mower.
Oskaloosa .....	.....	J. H. Gibson.

<i>Name of high school.</i>	<i>Superintendent.</i>	<i>Principal.</i>
Ottawa.....	James H. Adams.....	A. B. Beatty, A. B.
Paola.....	E. D. George, A. B.....	F. K. Ferguson, B. S.
Parsons.....	T. S. Johnson.....	Louise M. Schaub.
Peabody.....	A. H. Newton.....	Louise Doerle.
Phillipsburg.....	R. C. McCormick, A. B....	Ollie Johnson, A. B.
Pittsburg.....	A. H. Bushey.....	Geo. D. Seeley.
Pleasanton.....	C. C. English.....	Rachel Mentzer, A. B.
Pottawatomie Co., Westmoreland.....		Niles R. Mossman.
Pratt.....	E. D. Thompson.....	Mabel Miller, A. B.
Prosser Preparatory School, Kansas City, Mo....		J. P. Richardson, A. M.
Rosedale.....	George E. Rose, B. D....	Lillian Barth, A. B.
Russell.....	T. A. Edgerton.....	W. L. Bowersox.
Sabetha.....	George O. Kean.....	Susie M. Guild, A. B.
Salina.....	George R. Crissman, A. B..	John Lofty, A. B.
Scott Co., Scott City.....		G. Nyquist, A. B.
Scranton.....	John Linn.....	John Linn.
Sedgwick.....	R. A. Hampshire, M. S....	Adaline M. Finn, A. B.
Seneca.....	C. C. Starr, B. S.....	Alida Conwell.
Sheridan Co., Hoxie.....		R. G. Mueller, A. B.
Sherman Co., Goodland..		S. V. Mallory, B. S.
Smith Center.....	H. H. Gerardy.....	T. H. Hooper, A. B.
Solomon.....	H. H. Van Fleet, A. B....	Rhoda Field, A. B.
Stafford.....	T. O. Ramsey.....	Mary J. Barnett, A. B.
Sterling.....	F. C. Jacoby, A. M.....	Jeanette Inches, A. B.
Stillwater, Okla.....	W. C. Jamieson, A. B.....	Martha Dunn.
St. John's Military School, Salina.....		R. H. Mize, A. B.
St. Joseph, Mo.....		W. F. Ellis.
St. John.....		Nellie L. Funkhouser.
St. Marys.....	George T. Beach, A. M....	E. S. Francis.
Stockton.....		G. M. Brown.
Sumner Co., Wellington, ...		Thomas W. Butcher, A. B.
Syracuse.....	R. G. McGill.....	Stella Mehaffie.
Thomas Co., Colby.....		W. E. Ray, A. M.
Topeka.....	L. D. Whittemore, A. M..	H. L. Miller, A. B.
Troy.....	I. B. Morgan.....	I. B. Morgan.
Valley Falls.....	E. B. Gift.....	Maudie Myers.
Wa Keeney.....	Charles H. Mull.....	M. Katherine Hend.
Wamego.....	A. L. Bell.....	A. L. Bell.
Warrensburg, Mo.....	W. E. Morrow, B. L. D....	James I. Mallot, B. S. D.
Washington.....	L. W. Mayberry, A. B....	V. E. Postma.
Waterville.....	S. L. Soper.....	Esther McKelvy.
Waverly.....		J. W. Murphy, A. B.
Wentworth Military Academy, Lexington, Mo.....		Col. Sandford Sellers, A. M.
Wetmore.....		W. W. Wood, A. B.
Wichita.....	R. F. Knight, Ph. B.....	B. F. Dunkin, A. B.
Williamsburg.....	J. F. Lyon.....	J. F. Lyon.
Wilson.....	H. Coover.....	Katherine Burkholder.
Winfield.....	J. W. Spindler, A. M....	S. C. Bloss, A. B.
Yates Center.....	F. M. Patterson, B. S. D..	Anna Paterson.

The Course of Study

Leading to the Degree of Bachelor of Arts.

Amount of Work Required for Degree.

The candidate for the degree of bachelor of arts is required to complete three courses each term for four years, aggregating twenty-four courses. (There are two terms in a college year.) A university "course" is a subject (*i. e.*, economics) running five times a week for a half-year (one term). Each student, therefore, is required to carry fifteen hours of work a week each term. Under certain conditions of high scholarship students may be allowed to take four courses, by which means they may shorten the time necessary to be eligible for a degree. By making use of the summer session, the time necessary for graduation may be further shortened.

Required and Elective Courses.

The University regards the work of the first two years of the college course as essentially connected with the preparatory work, as preliminary fundamental work necessary to the more specialized courses of the last two years. The preparatory work and the work in the Freshman and Sophomore years are, therefore, considered together. Fifteen units are required for admission, as given in detail on page 68. There are twelve units in the first two college years, making a total of twenty-seven units which must be completed before the close of the Sophomore year. Of the fifteen preparatory units, five and one-half are specifically required, three required from one group, and one from each of three other groups, while the remaining four may be chosen at will from any subjects in the groups not already counted. (See page 68.)

Of the twelve college units, only one, rhetoric (see page 89), is specifically required. The others may be chosen from groups given below, provided a certain minimum number of courses be taken from each group, as noted by the numerals beneath the names of groups; *provided, also, that the student may not take a course corresponding to any he has completed in his preparatory school, and which has been counted for admission.*

Courses Open to Freshmen and Sophomores.

The following groups show the courses open to Freshmen and Sophomores and the number of courses which must be completed either in the preparatory school or in the College before the close of

the Sophomore year. It should be borne in mind that certain courses, like mathematics I, Latin I, German I, II, III, may be taken either in the preparatory school or the University. Rhetoric I is required of all Freshmen. (See list of courses.)

The Roman numerals correspond to the numerals used in the detailed account of courses.

Group.	Name of course. First term.	Name of course. Second term.
English. (4)	Rhetoric I at 8, 9, 4.30. English Literature I at 9. English Literature II at 2.30. Public Speaking I at 2.30.	Rhetoric I at 8, 9, 2.30. English Literature I at 3.30. English Literature II at 11.15. Public Speaking I at 2.30.
Mathematics. (3)	Mathematics I at 2.30. Mathematics II at 8, 10, 3.30. Mathematics IV at 8, 4.30. Mathematics V at 9, 10.15.	Mathematics I at 8. Mathematics II at 9, 2.30. Mathematics III at 1.30. Mathematics IV at 10.15, 3.30. Mathematics V at 8, 9. Surveying V at 11.15.
Foreign Languages. (6)	Latin I at 8. Latin II at 9, 11.15. Latin IV at 10.15. Greek I at 9. Greek III at 9. Greek V at 11.15. German I at 8, 9, 11.15, 2.30. German III at 9, 11.15, 3.30, German V at 11.15. French I at 8, 9, 10.15, 11.15, 1.30. French III at 9, 10.15. French V at 10.15. Spanish I at 2.30. Spanish III at 3.30.	Latin II at 8. Latin III at 9, 11.15. Latin V at 10.15. Greek II at 9. Greek IV at 9. Greek VI at 8. German II at 8, 9, 11.15, 2.30. German IV at 8, 9, 11.15, 3.30. German VI at 10.15, 11.30. French II at 8, 9, 11.15, 4.30. French IV at 9, 10.15. French VI at 11.15. Spanish II at 2.30. Spanish IV at 3.30.
Physical Sciences. (3)	Chemistry I at 1.30-3.30. Chemistry II at 8-10. Chemistry III. Physics II at 9. Geology I at 3.30.	Chemistry I at 10.15-12.15. Chemistry III at 8-10. Physics I at 10.15-12.15.
Biological Sciences. (3)	Zoology I at 1.30-3.30. Botany II at 1.30-3.30, 3.30-5.30. Psychology I at 8. Entomology I at 1.30-3.30.	Zoology III at 1.30-3.30. Botany I at 1.30-3.30. Botany III at 1.30-3.30. Psychology I at 8.
Historical Sciences. (2)	History I at 8, 2.30. History II at 9. Economics I at 3.30.	History III at 8, 9. Economics II at 2.30.

Courses Open to Juniors and Seniors.

All undergraduate courses given in the College (see Courses of Instruction), are open to Juniors and Seniors, with the single restriction that during those years not more than four courses may be taken under one instructor.

The Bachelor's Degree in Law and Medicine.

During the Junior and Senior years, the student may elect one-half year's work from the curriculum of the School of Medicine, or the curriculum of the School of Law. (When such optional work is chosen from the curriculum of the School of Law, the faculties of the College and the School of Law shall prescribe the courses from which choice may be made.) Provided, that when such professional work is chosen from medicine, the candidate shall, upon graduation, receive the degree of bachelor of arts in medicine; and when chosen from law, the degree of bachelor of arts in law.

Courses in Business

In its Higher Relations.

Leading to General Business, Banking, Insurance, and Journalism.

Leading to the Degree of Bachelor of Arts.

The following courses do not in any sense form a school of commerce or business, nor is such a school contemplated. They are organized within the College of the University. They are not, except as to the regular required work of all students in the College, required courses, but are made up of the electives open to all students alike.

The courses are designed, however, to offer to the large number of men who enter business from the University somewhat the same definite assistance that it gives those who are to be engineers, lawyers, etc. This has been made possible by a large development of late years of special courses in language, history, mathematics, and economics. It is not expected that the University can do more than to organize into programs of study leading to definite ends such courses as now may be offered, and such others, few in number, as it may be possible to add. The University does not seek to furnish that large portion of business training which can come only from experience. It undertakes to give the fundamental and specialized courses of study that illustrate the economic forces that control the business world. It aims at the same time to give the cultural training which is indispensable to the thoroughly enlightened citizen.

Lectures.

In addition to the regular classroom work, lectures will be given by men eminent in the profession or calling which they represent. The lectures will have for an object the illustrating from experience of the theory presented in the classroom, and of the relation of the fundamental principles enumerated in the courses to actual experience. Students in these courses will be expected to attend the lectures.

Grade of the Work.

The following courses are therefore based upon the requirements for entrance to the College, and also upon the required work of the Freshman and Sophomore years. The remaining work is in the main definitely suggested for the guidance of the student in his choice of subjects. It is also rather more exacting in its requirements than the average work elected by students.

Courses of Study.

Freshman and Sophomore Years, in All Courses.

In the Freshman and Sophomore years, the courses in general business, insurance, banking and journalism are alike.

Requirements.

1. Students entering these courses must have met the requirements for admission to the Freshman class of the College.

2. Students entering these courses must do also all the required work of the Freshman and Sophomore years, as laid down in this catalogue.

3. After doing the required work of the Freshman and Sophomore years, six terms of work remain in those years, which must be distributed as follows:

English. One term.

Foreign Language. One term.

Physical Science (Physics I if not taken in high school and if Insurance is wanted). One term.

Biological Science. One term.

European History or Economics. One term.

Mathematics.* One term.

*Students entering the Freshman class with plane trigonometry, or who take plane trigonometry in the Freshman year, may take surveying here.

Course in General Business,

JUNIOR YEAR.

First Term :

Elementary Law and Contracts, or Negotiable Instruments. One term.

Foreign Language. One term.

Commercial History and Geography. One term.

Second Term :

Financial and Monetary History of the United States, and Money and Banking. One term.

English Literature. One term.

Constitutional and International Law. One term.

SENIOR YEAR.

First Term :

Public Finance, Corporations. One term.

Domestic Commerce and Transportation. One term.

Foreign Commerce and Economic Statistics. One term.

Second Term :

Labor Problems and History of Trade-unionism. One term.

History of Economic Thought. One term.

European History of the Nineteenth Century. One term.

Course in Banking.

JUNIOR YEAR.

First Term :

Elementary Law and Contracts, or Negotiable Instruments. One term.

Foreign Language. One term.

Commercial History and Geography. One term.

Second Term :

Financial and Monetary History of the United States, and Money and Banking. One term.

English Literature. One term.

Constitutional and International Law. One term.

SENIOR YEAR.

First Term :

Public Finance, Corporations. One term.

Domestic Commerce and Transportation. One term.

Foreign Commerce and Economic Statistics. One term.

Second Term :

Labor Problems and History of Trade-unionism. One term.

Banking and the Money Market. One term.

European History of the Nineteenth Century. One term.

Course in Insurance.

JUNIOR YEAR.

First Term :

- Elementary Law and Insurance, or Contracts. One term.
- Foreign Language. One term.
- Chemistry II or IV. One term.

Second Term :

- Physics II. One term.
- Financial and Monetary History of the United States, and Money and Banking. One term.
- Constitutional and International Law. One term.
- (Drawing, extra, three times per week for one year ; especially for those interested in fire insurance.)

SENIOR YEAR.

First Term :

- Public Finance and Corporations. One term.
- Domestic Commerce and Transportation, or Physics* or Chemistry. One term.
- Foreign Commerce and Economic Statistics, or Building Materials. One term.

Second Term :

- Economics of Insurance. One term.
- Accounting and Theory of Adjusting. One term.
- English Literature. One term.

Course in Journalism.

JUNIOR YEAR.

First Term :

- American Colonial History. One term.
- English or other Literature. One term.
- Elementary Law and Contracts. One term.

Second Term :

- Constitutional and International Law. One term.
- Advanced English Composition. One term.
- Philosophy (Ethics). One term.

SENIOR YEAR.

First Term :

- Sociology or Economics. One term.
- Newspaper Writing. One term.
- American History (Administrations). One term.

* Students interested in fire insurance should take the physics, chemistry, and building materials.

Second Term :

Sociology or Economics. One term.

American History (Administrations). One term.

English Literature. One term.

Courses in Domestic Science.

The University offers for next year a few courses in domestic science. These courses will be of strictly University grade, and, if experience warrants, will be added to as time goes on until a fully formulated course results. The work will be organized within the College and the courses given will be on the same plane as other elective courses. Students electing such work must conform to all requirements for entrance to the Freshman class of the College, and must do all the required work of the Freshman and Sophomore years. The work in the main is open to Juniors and Seniors only.

The following courses will be offered for the year 1904-'05:

HOUSEHOLD ARCHITECTURE. To include among other things sanitation, ventilation, decoration, etc., together with lectures upon trees, plants, and grounds. One term. (Given also in 1905-'06.)

PHYSIOLOGY AND HYGIENE. To include, among other things, simple applied therapeutics, treatment of accidents, the principles of nursing, etc. One term.

SOCIOLOGICAL AND HISTORICAL STUDY OF THE FAMILY, for which Sociology I is a prerequisite. One-half term.

BACTERIOLOGY. To include a treatment of the more important bacteria of food and water, and the prevention of the spread of infectious diseases. One-half term.

PHYSICAL EDUCATION, THEORY AND PRACTICE. To include, among other things, the physiology of childhood and the physical education of children.

CHEMISTRY AND PHYSIOLOGY OF FOODS. To include, among other things, dietetics, balanced rations, standard supplies, and full laboratory work. One term.

Courses of Instruction in the College.

Undergraduate and Graduate.

All courses given in the first half of any term are indicated by (*a*); those given in the second half of any term by (*b*).

Courses marked "For Undergraduates Only" are open to Freshmen and Sophomores.

All undergraduate courses given in the College are open to Juniors and Seniors.

HUMAN ANATOMY.

Associate Professor Hoxie.

Demonstrator SMITH.

EQUIPMENT.

The laboratory occupies the whole lower floor of Medical Hall, and consists of two large, cement-floored rooms for dissection, one large room for study and research, two storerooms, and the private room of the instructors. The subjects are preserved in formalin solutions and are odorless and of natural consistency. Auzoux models, reference books and preserved specimens are provided for students' use. The lighting is by gas and electricity and the heating by steam.

ADVICE AS TO CHOICE OF COURSES.

Students contemplating the study of anatomy should have two years of preliminary instruction in language and arts. The courses should be taken in the order indicated in the statement of each course. Course I may be taken without any other work in anatomy. The others are so interdependent as to demand a consequent study of II, III, IV, V, and at the same time practical work in dissection (course VI). Course VII involves some preliminary dissection on the parts to be studied.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

I.—GENERAL ANATOMY. A series of lectures introductory to the study of medicine in general and of human anatomy in particular. Daily, during the first five weeks of the school year, at 11:15. Two-fifths of term. Professor Hoxie.

II.—OSTEOLOGY. Five recitations weekly during the first half of the first term, at 8. Text-book, Cunningham's Anatomy. Half-term.

III.—MYOLOGY. Five recitations weekly during the first term, succeeding course I, at 11:15. Text-book, Cunningham. Three-fifths of term. Professor Hoxie.

IV.—ORGANOLOGY. Five recitations weekly during the first part of the second term, at 11:15. Text-book, Cunningham. Half-term. Professor Hoxie.

VII.—A laboratory course in the study and drawing of serial cross-sections of the human body. Daily, by appointment. Half-term of credit for the work on each of the four parts (head, trunk, arm, leg) of the body. Professor Hoxie.

VIII.—THE BRAIN AS THE ORGAN OF MIND. This course is offered in conjunction with the department of philosophy as a minor in the advanced study of psychology. Its aim, therefore, is to provide a thorough foundation for the investigation of the phenomena of sensation, and includes a study of the nerves, the special senses, the conduction paths, the end organs, and cerebral localization, as far as is necessary for this purpose. Students taking this course will take courses I and V with the students of medicine, after which they will do special reading and laboratory work. Throughout the year, by appointment. Professor Hoxie.

IX.—TEACHERS' COURSE in hygiene, designed especially for those who must teach the "anatomy, physiology and hygiene" of the public schools. It will discuss the medical and scientific bearings of the problems of personal and public hygiene. 2d term, 2d half. Professor Hoxie.

X.—HYGIENE AND APPLIED THERAPEUTICS. This course will follow Professor Hyde's course on anatomy and physiology in the course in domestic science. Its object will be a practical discussion of the care of the body in the home, the treatment of emergencies brought into home life by infectious diseases, accidents, burns, etc., and the principles governing the care of the sick. The endeavor will be to develop an ability to maintain and restore health with as little use of drugs and similar foreign agencies as is possible. The course will be followed by five lectures from Prof. L. E. Sayre on applied therapeutics. Daily, for ten weeks. Professor Hoxie.

ASTRONOMY.

(See Mathematics.)

BOTANY.

Professor STEVENS.

Associate Professor BARBER.

Assistant Professor STERLING.

Miss WISE.

EQUIPMENT.

The following laboratories are equipped with apparatus for carrying out the work to which they are devoted: Laboratory for general morphology; laboratory for plant histology; laboratory for systematic botany, in connection with an ample working herbarium; laboratory for plant physiology; laboratory for bacteriology. The equipment embraces microtomes, paraffin baths, etc., for histological work, simple and compound microscopes for each student, individual sets of apparatus for physiological experiments, and apparatus for carrying on bacteriological research according to the best methods. In connection with the laboratory for plant physiology is a workroom supplied with tools and machinery for the construction of apparatus as needed. There is a department library, in which are at hand the books of reference needed by the students in connection with their laboratory work, and the general library contains the leading botanical periodicals.

ADVICE AS TO CHOICE OF COURSES.

All subsequent courses in botany must be preceded by course I, or its equivalent in other schools. Following this the student should take course II, if he wishes to become acquainted with histological technique and to understand the cellular structure of plants and how they are equipped to perform their physiological functions, and to prepare himself for experimental plant physiology in course IV. He should take course III following course I, if he wishes to get an intimate acquaintance of the morphology and life-histories of the different groups of plants, from the lowest to the highest; or course V immediately following course I, if he desires first of all to broaden his knowledge of the morphology of the flowering plants. If, after course I, the student wishes to elect two courses that would best broaden his general information about plants, courses II and III should be chosen. If a basis for a knowledge of sanitation is desired, courses III and VIII should be elected. Courses I, II, IV and V are fundamental to scientific plant culture. Students who wish to prepare themselves to teach botany in high schools should take courses I to V inclusive.

COURSES FOR UNDERGRADUATES ONLY.

I.—ELEMENTARY STRUCTURAL BOTANY. A study of the structure of spermatophytes, with a brief introduction to fungi, algæ, mosses, and ferns. The use of a manual; field studies. Laboratory work ten hours a week; recitations and lectures. Open to all students of the College. 2d term, daily, 1:30 to 3:30. Professor Stevens, Mr. Sterling, and Miss Wise.

II.—PLANT HISTOLOGY. A study of plant tissues with special reference to their development and functions; plant products, their origin and physiological and biological significance; histological technique. Laboratory work ten hours a week, recitations, and lectures. Open to all students of the College. 1st term, daily, 1:30 to 3:30. Professor Stevens and Miss Wise.

III. CRYPTOGAMIC BOTANY. The life-histories of cryptogams, and an introduction to the study of reproduction in phanerogams. Open to all students who have taken course I. 2d term, daily, 3:30 to 5:30. Professor Barber.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

IV.—PLANT PHYSIOLOGY.—Experimental work ten hours a week; reading and reports on assigned topics. Open to Juniors and Seniors who have taken courses I and II. 2d term, daily, 3:30 to 5:30, and other hours as the work may require. Professor Stevens.

V.—SYSTEMATIC BOTANY.—Laboratory work ten hours a week, and lectures. Open to Juniors and Seniors who have taken course I, or an equivalent. 1st term, daily, 10:15 to 12:15. Professor Barber.

VI.—PROBLEMS IN TAXONOMY. Plant relationships and classification, in which selected groups of plants are critically studied. By appointment. 1st or 2d term, or throughout the year. Professor Barber.

VII.—PROBLEMS IN THE MORPHOLOGY OF THALLOPHYTES, BRYOPHYTES AND PTERIDOPHYTES.—Laboratory work and reading. By appointment. 1st or 2d term, or throughout the year. Professor Barber.

VIII.—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES.—A study of the forms of plant members under varying environment. Reading and laboratory work. By appointment. 1st or 2d term, or throughout the year. Professor Stevens.

IX.—PROBLEMS IN HISTOGENESIS. A study of the development of the tissues in selected groups of plants. By appointment. 1st or 2d term, or throughout the year. Professor Stevens.

X.—BACTERIOLOGY. Bacteriological technique. Pathenogenic bacteria and other forms of economic importance. Laboratory work, ten hours a week, reading, and lectures. 2d term, daily, 1:30 to 3:30. Professor Barber.

XI.—BACTERIOLOGY FOR DOMESTIC SCIENCE. To include a treatment of the more important bacteria of food and water, and the prevention of the spread of infectious diseases. One-half term. Professor Barber.

XII.—DOMESTICATED PLANTS. The origin and amelioration of cultivated plants. Methods of propagation and culture of trees, shrubs, herbaceous perennials, and annuals. The planting of private and public grounds. Laboratory and field-work, reading, and lectures. 1st term, daily, 3:30 to 5:30. Professor Stevens and Professor Barber, and lecturers on the various phases of the work.

COURSES FOR GRADUATES ONLY.

XIII.—STRUCTURE AND DEVELOPMENT OF CRYPTOGAMS. Bacteria or any group made be made a special study. By appointment. Daily throughout the year. Professor Barber.

XIV.—MORPHOLOGY AND PHYSIOLOGY OF THE VEGETABLE CELL. A study of different cell forms, their adaptation to specific functions, and their behavior under varying environment; the processes of nuclear and cell division; reproduction. Laboratory work and reading. By appointment. 1st or 2d term, or throughout the year. Professor Stevens.

XV.—PLANT ECOLOGY. The relation of plants to their environment. Laboratory and field-work and reading. Warming's *Lehrbuch der Oecologischen Pflanzengeographie*, Schimper's *Pflanzengeographie auf Physiologischen Grundlage*, and current literature. By appointment. Daily throughout the year, including the summer months. Professor Stevens.

CHEMISTRY.

Professor BAILEY,
Associate Professor BARTOW.
Assistant Professor CADY.
Assistant Professor MCFARLAND.
Mr. GUSTAFSON.
Mr. MCCOLLUM.
Mr. WELIN, Fellow.

EQUIPMENT.

The Chemistry Building, which was completed in 1900, affords abundant laboratory space for carrying on the work. The rooms are furnished with gas, water, vacuum for rapid filtering, distilled water, and compressed air. The balance-rooms on each floor, store-

rooms and instructors' rooms, conveniently located, afford every facility for scientific research. The laboratory for general chemistry accommodates 140 students working at one time, or 280 in two divisions; the qualitative laboratory has a sufficient number of desks for 72 students working at the same time, or 144 in two divisions; the quantitative laboratory accommodates 80 students, and the organic laboratory 72 students working at one time, or 144 in two divisions. The large lecture-room will seat over 300. In addition to these rooms, there are numerous smaller laboratories and classrooms that will each accommodate from ten to fifty students. Each student is assigned a desk and is loaned apparatus for his individual use. Hoods to carry off injurious gases are placed between all the windows in the large laboratories, and, with a constant pressure of air produced by a fan blower, abundant ventilation is secured. A liquid-air plant of unusual efficiency has been installed, which affords excellent facilities for making researches at extremely low temperatures. The assay laboratory, located in the basement, is provided with the usual muffle and crucible furnaces, and well stocked with ores for experimental use.

For illustration and demonstration in lectures there are supplied projection lanterns, cylinders of compressed gases, a liquid-air machine, apparatus for testing coal-oil, gas, alcohol; standard sets of thermometers and hydrometers, combustion furnaces, analytical balances; mineral collections; 800 specimens for illustrating organic chemistry; and sets of specimens for illustrating the manufacture of china, leather, zinc, glass, fats, soap, sugar, alcoholic liquors, gunpowder, fertilizers, white lead, acids, oils, etc. In addition to these, the apparatus for use in physical chemistry has been recently increased by the purchase of several hundred dollars' worth of electrical instruments and apparatus for thermochemistry, for the determination of molar weights, and for the measurement of the critical constants of liquids, so that the department is very fairly equipped for work in this line.

ADVICE AS TO CHOICE OF COURSES.

In the selection of courses to be pursued in chemistry, it is suggested that those who desire to study for medicine select courses I, II, III, V, VII, IX, XII; for teaching, courses I, II, III, IV, VII, XII, XVI, XVIII; for commercial chemistry, courses I, II, III, IV, VI, VII, VIII, IX, X, XI, XII, XV, XVI; for mining and metal lurgy, courses I, II, III, VII, VIII, XI, XV, XVI; for business or general culture, courses I, II, III, IV, V, XII.

Those who desire to take graduate work should first make up undergraduate work to the point where they can do the advanced work satisfactorily.

COURSES FOR UNDERGRADUATES ONLY.

I.—INTRODUCTORY CHEMISTRY. A study of the chemical elements and their compounds. Experimental lectures and recitations Monday, Wednesday, and Friday, 10:15 to 12:15; laboratory exercises Tuesday and Thursday, 10:15 to 12:15, or, for one division, from 3:30 to 5:30. Remsen's Briefer Course in Chemistry. Open to all students of the College. 2d term, daily. Professor Bailey.

II.—ADVANCED INORGANIC CHEMISTRY. Lectures, recitations, and laboratory work. Ostwald's Principles of Inorganic Chemistry, translated by Alexander Findlay. Open to all students of the College who have taken course I. 1st term, daily, 8 to 10. Mr. Cady and Mr. Gustafson.

III.—QUALITATIVE ANALYSIS. Lectures and laboratory work. Bailey and Cady's Guide to the Study of Qualitative Analysis. Open to all students of the College who have taken course II. 2d term, daily, 8 to 10. Mr. Cady and Mr. Gustafson.

IV.—TECHNICAL CHEMISTRY. This course includes a technical study of the manufacture of acids, alkalies, explosives, glass, pottery, porcelain, mortars, cements, paper, alcohol, vinegar, leather; also of dyeing, calico printing, and similar industries. Lectures and recitations. Open to Juniors and Seniors who have taken course I. 1st term, daily, at 11:15. Professor Bailey.

V.—THE CHEMISTRY AND PHYSIOLOGY OF FOODS. A practical study of food-supply, its source, composition, liability to falsification and deterioration, preparation, and methods of preservation. This course includes also a study of dietetics, balanced rations, economy of food, and the digestive processes. The latter topic will include lectures on the action of the digestive ferments, by Professor Sayre. Lectures and recitations Monday, Tuesday, and Wednesday; laboratory work on Thursday and Friday. Open to Juniors and Seniors who have taken course I. 2d term, daily, 1:30 to 3:30. Professor Bailey.

VI.—GLASS-BLOWING. Instruction in the manipulation of glass before the blowpipe. One-fifth course. Open to Juniors and Seniors. 1st term, one afternoon a week, 1:30 to 5:30, by appointment. Mr. Cady.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

VII.—QUANTITATIVE ANALYSIS. Lectures and laboratory work. Newth's Quantitative Analysis. Must be preceded by course III. 1st term, daily, 1:30 to 3:30, or 3:30 to 5:30, Professor Bailey; or 2d term, daily, 8 to 10. Professor Bartow.

VIII.—QUANTITATIVE ANALYSIS. Advanced course. Must be preceded by course VII. Either of the subjects mentioned below may be taken: (a) Chemistry of the cement industry. (b) Chemistry of the packing-house industries. (c) Iron analysis. (d) Electrolytic estimation of metals. (e) Gas and oil analysis. (Should be preceded by course XII.) 1st term, daily, 1:30 to 3:30, or 3:30 to 5:30, Professor Bailey; or 2d term, daily, 8 to 10. Professor Bartow.

IX.—WATER ANALYSIS. A study of the mineral and sanitary analyses of waters. Mason's Water Analysis. A laboratory course. Must be preceded by course VII. 2d term, (b), ten hours a week, by appointment. Professor Bartow.

X.—SUGAR ANALYSIS. A laboratory course. Must be preceded by course VII. 2d term, (a), daily, 8 to 10.

XI.—ASSAYING. This is a course in the volumetric analysis of the ores of copper, iron, zinc, manganese, etc., followed by the analysis of bullion. During the last half of the term the time will be occupied with the fire assay of the ores of gold, silver, and lead. Lectures and laboratory work. Furman's Manual of Practical Assaying. Must be preceded by course VII and mineralogy I. 2d term, daily, 8 to 10, and by appointment. Professor Bartow and Mr. McFarland.

XII.—ORGANIC CHEMISTRY. A study of the hydrocarbons and their derivatives. Lectures, recitations, and laboratory work. Noyes's Organic Chemistry. Must be preceded by course I. 2d term, daily, 3:30 to 5:30. Professor Bartow.

XIII.—ORGANIC PREPARATIONS. A special study of organic synthetic methods. Lectures and laboratory work. Practical Methods of Organic Chemistry, Gattermann, translated by Shober. Must be preceded by course XII. 1st term, daily, 10:15 to 12:15. Professor Bartow.

XIV.—ORGANIC PREPARATIONS, ADVANCED. A continuation of the work of the previous course, with ultimate organic analysis for carbon, hydrogen, nitrogen, sulphur, and the halogens. Must be preceded by course XIII. Either term, ten hours a week, by appointment. Professor Bartow.

XV.—METALLURGY. This course includes a study of the metallurgy of lead, copper, zinc, and tin, and general metallurgy, followed by a study of iron, including the ores, methods of manufacture of pig iron, wrought iron, steels, also of the Bessemer and open-hearth processes, and the composition of slags, fluxes, and furnace gases. Must be preceded by course II. 2d term, daily, at 8. Mr. McFarland.

XVI.—PHYSICAL CHEMISTRY. A general course in theoretical and physical chemistry. Lectures and laboratory work. Must be preceded by chemistry VII, or by chemistry II and physics IV and V and mathematics V. 1st term, daily, at 10:15. Mr. Cady.

XVII.—PHYSICAL CHEMISTRY. A continuation of the preceding course. 2d term, daily, at 10:15. Mr. Cady.

XVIII.—ELECTROCHEMISTRY. The study of reactions involving oxidation and reduction, electrosyntheses and decompositions, the preparation of chemicals, the reduction of metals from their ores, and the purification of metallurgical products. A laboratory course, with lectures on the theory and practice of electrochemistry. Must be preceded by course XVI. 2d term, daily, by appointment. Mr. Cady.

—COURSES FOR GRADUATES ONLY.

XIX.—ANALYTICAL CHEMISTRY. A research course. This may include the investigation of some problem in metallurgical or manufacturing processes, the complete investigation of some proposed water-supply, the development of new methods in analytical chemistry, or a study and comparison of methods already proposed. By appointment. Professor Bailey.

XX.—ORGANIC CHEMISTRY. A research course. This course offers a chance for a more extended study and original investigation to those who have proper preparation. By appointment. Professor Bartow.

XXI.—HISTORY OF CHEMISTRY. A course in the history of chemistry and the development of chemical theories. Recitations, library work, and the presentation of reports. 2d term, three times a week, at 4:30. Offered in 1904-'05 and alternate years thereafter. Professor Bailey.

XXII.—PHYSICAL CHEMISTRY. A research course extending over two or more terms. An opportunity is offered, to those who are sufficiently advanced, to carry on investigations in this most recently developed branch of chemistry. By appointment. Mr. Cady.

ECONOMICS.

(See Sociology.)

EDUCATION.

Professor OLIN.

Mr. VINCENT, Fellow.

EQUIPMENT.

The library facilities for the work of this department include somewhat more than 1000 volumes under the title "Education," and a large number of volumes listed under other titles. Among these volumes are complete sets of the Reports of the Commissioner of Education, Horace Mann's Reports, the International Education Series, the Great Educators Series, etc. There are files of the *Pedagogical Seminary*, the *Educational Review*, the *School Review*, and other high-class educational periodicals.

The department has a museum room on the third floor of the Chemistry Building, in which are found several hundred volumes of school-books, ancient and modern, pamphlets, and a limited number of samples of school furnishings and apparatus.

Weekly sessions of the conference in education are held for the consideration of current literature and discussions of topics in education. These meetings are open to undergraduates, and attendance upon them is required of graduate students in the department.

ADVICE AS TO CHOICE OF COURSES.

Courses I and II are recommended for all students in education. In addition to these, for purposes of general culture, courses VII and VIII are recommended; for technical study and practical application of educational principles, courses III, IV, V, VI and X are recommended, in the order named. Course XI is an alternative with course IV. Students intending to qualify for the University teacher's diploma are recommended to begin their work in education with the second term of the Junior year.

COURSES FOR UNDERGRADUATES ONLY.

I.—THE HISTORY OF EDUCATION. A survey of both ancient and modern periods. Studies of typical movements in education, the development of systems, and the work of great educators. 1st and 2d terms, daily, at 3:30. Mr. ———.

III.—SCHOOL LAW AND ADMINISTRATION. A study of the Kansas laws relating to the maintenance, supervision and administration of schools. Comparison with the school laws of other states. Individual studies of special state schools of Kansas and city systems of other states. 1st term, (b), daily, at 2:30. Professor Olin.

IV.—SCHOOL ECONOMY. Conditions and principles essential to efficient school work; school hygiene, organization and authorities of the school, financial support, courses of study, government, li-

brary management. Required reading, observation work, class discussion, and lectures. Open to Juniors and Seniors who have taken courses I and II. 2d term, (a), daily, at 2:30. Professor Olin. (Not given in 1904-'05.)

V.—METHODS OF INSTRUCTION. Rational basis of the teaching process. Examination of the cardinal Herbartian doctrines. Illustrations from typical elementary school subjects. Special studies in the methods of teaching secondary-school subjects. Observation in elementary and secondary schools. Library work, class discussion, and lectures. Open to Juniors and Seniors who have taken courses I and II. 2d term, (b), daily, at 2:30. Professor Olin.

VI.—SCHOOL SUPERVISION. Largely based on the texts of Payne and Pickard, and the Reports of the Committees of Twelve and Fifteen. Reports, discussions, and lectures. 1st term, (a), daily, hours by appointment. Professor Olin.

XI.—THE SECONDARY SCHOOL. A study of the development, equipment, curriculum, and administration of the American high school. 2d term, (a), daily, at 2:30. Professor Olin. (Not given in 1905-'06.)

COURSES FOR GRADUATES AND ADVANCED UNDERGRADUATES.

II.—PHILOSOPHY OF EDUCATION. Library work, based on Rosenkranz and Compayre. Required reading, reviews, and special studies. 1st term, (a), daily, at 2:30. Professor Olin.

VII.—COMPARATIVE STUDY OF EDUCATIONAL SYSTEMS. A study of the elements of the school systems of England, France, and Germany, and a comparison with the systems of this country. Required reading, special studies, and reports. 1st term, (b), hours by appointment. Professor Olin.

VIII.—EDUCATIONAL THEORY. A critical study of the educational doctrines found in the writings of Plato, Comenius, Locke, Rousseau, Herbart, and Spencer. This course should be preceded by course I. 1st term, daily, at 10:15. Professor Olin.

X.—SEMINARY. Individual investigation of special subjects in educational philosophy, institutions, and administration. Open to students who have done previously at least two terms' work in the department. 2d term, hours by appointment. Professor Olin.

COURSE FOR GRADUATES ONLY.

IX.—PROBLEMS OF ORGANIZATION, MANAGEMENT, AND METHOD IN EDUCATIONAL SYSTEMS. Library work, reports, and discussions. Not open to students who have taken courses IV and V. 2d term, daily, at 10. Professor Olin.

ENGLISH LANGUAGE AND RHETORIC.

Professor HOPKINS.

Professor DUNLAP.

Associate Professor O'LEARY.

Assistant Professor RAYMOND.

Assistant Professor LYNN.

Assistant Professor BRYANT.

Assistant Professor ———.

Miss GARDNER.

Miss MCKNIGHT, Fellow.

EQUIPMENT.

Apart from a number of portraits and historical maps, the equipment of this department is the University library, in which are collections of volumes and periodicals relating especially to rhetoric and composition, to English style and English literary criticism, to journalism and newspaper work in general, and to English philology. Among these are an especially fine collection of important dictionaries, and complete sets of many journals, such as *Anglia* and *Englische Studien*, and of such publications as those of the Chaucer Society, the Early English Text Society, and the English and the American Dialect Societies. The number of volumes pertaining more directly to the subjects of this department and not included in the total for English literature is about 1000; and the total for all departments of English is about 5000. A large reading-room is reserved for the use of students in these departments, under the charge of a special librarian.

ADVICE AS TO CHOICE OF COURSES.

Every student should confer with an instructor with reference to the general arrangement of his studies as early in his course as he can. Few undergraduate students are justified in confining attention to any single department of English study; but the principal part of that work may always be shaped with reference to future occupation or profession. Major work in English composition is sometimes advisable for those contemplating a journalistic or a literary career; major work in English language for intending teachers who desire an especially thorough preparation; but either class of students should give all possible attention to English literature also. Conversely, every student of English literature should give some attention to English language. In the following list, courses I-V and XV-XVIII, inclusive, belong to the rhetorical group; courses VI-X and XI-XIV to the linguistic. Of these, courses I-IV are fundamental, as explained below; courses *Va* and *Vb* are intended especially for journalists; course XV is for those interested in literary work; courses VI, VIII and IX are important for teachers, and courses VII and X are for advanced students of language or literature. The proper

relation and succession of these courses are shown in the descriptions following. Any course in this list after course I must be preceded by course I, and by courses I and II in English literature, or their equivalent.

COURSES FOR UNDERGRADUATES ONLY.

I.—RHETORIC AND ENGLISH COMPOSITION. Outlines of rhetoric, with exercises and themes. Required of all Freshmen in the College. 1st or 2d term, daily: 1st term, at 8, 9, 4:30, and at other hours to be arranged; 2d term, at 8, 9, 2:30, and at other hours to be arranged. Miss Lynn.

III.—NARRATION AND DESCRIPTION. Study of general principles, with exercises. A fundamental course, leading to either *Va* or *XV*. 1st term. Lectures Monday, Wednesday, and Friday, at 8; conferences Tuesday and Thursday, at 8. Professor O'Leary.

IV.—EXPOSITION AND ARGUMENT. Study of general principles, with exercises and briefs. A fundamental course, leading to either *Va* or *XV*, or to studies in public speaking and debate. 2d term. Lectures Monday, Wednesday, and Friday, at 8; conferences Tuesday and Thursday, at 8. Mr. Bryant.

Va.—NEWSPAPER WRITING. A survey of all departments of newspaper work, with practice in reporting, in editorial and feature writing, and in proof-reading, in connection with local and other newspapers. One or more of the subjects named may be chosen for special attention. To be preceded by course III or course IV, and by one or more courses in English literature, in addition to I and II. 1st term, daily, at 11:15. Professor Hopkins.

Vb.—NEWSPAPER WRITING. A continuation of course *Va*, involving assignment to regular newspaper duty, and, in addition, the special study of some department of newspaper making, with thesis based on the literature of the subject and on the study of representative periodicals. A conference course, open only to those who have satisfactorily completed course *Va*. 2d term, daily, at 10:15. Professor Hopkins.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

VI.—ELEMENTARY OLD ENGLISH (Anglo-Saxon). Introductory course in Old English grammar, and reading of West Saxon texts, chiefly prose. Should be preceded by courses I and II in German, or their equivalent. Required for admission to all advanced courses in English language. 1st term, daily, at 9. Professor Hopkins.

VII.—BEOWULF. Lectures upon *Béowulf* and Old English poetry, with interpretation of the text of *Béowulf*. Must be preceded by course VI. 2d term, daily, at 11:15. Professor Hopkins.

VIII.—(1) HISTORY OF THE ENGLISH LANGUAGE. Elements of

English philology, including sources and development of the language, its pronunciation, inflections, and syntax. May with advantage be preceded by course VI. 1st term, Monday, Wednesday, and Friday, at 11:15. (2) GENERAL INTRODUCTION TO PHONETICS. Open to advanced students of any language, and by special arrangement may be taken separately as a two-hour course. 1st term, Tuesday and Thursday, at 11:15. Mr. Bryant.

IX.—METHODS. Principles of teaching English composition, English literature, and English language, with illustrations, and with such practice teaching as can be arranged for in the University and in the Lawrence high school; Seniors to teach in the term in which the course is taken, Juniors in the term following. Only a limited number of students can be admitted, the selection to be determined by priority of application and by the degree of preparation. The course should be preceded by either of courses III and IV, either of courses VI and VIII (both, if practicable), and by one or more courses in English literature in addition to I and II. 2d term, daily, at 3:30. Professor O'Leary.

X.—ENGLISH LITERATURE OF THE FOURTEENTH CENTURY. Lectures, with reading of Morris & Skeat's *Specimens of Early English*, part II, and of *Piers Plowman*. Open to students who have not had elementary Old English. 1st term, daily, at 10:15. Professor Hopkins.

COURSES FOR GRADUATES ONLY.

But one course in each group can be given in any one year, to be determined by consultation; otherwise courses to follow the order here indicated. On application by qualified students, it may be possible to substitute other advanced or special-research courses for those here named. Admission to any graduate course is by consent of the instructor, and is conditioned upon breadth and completeness of preparation.

A. Courses in English Language.

XI.—LANGUAGE AND LITERATURE OF THE THIRTEENTH CENTURY. Study of selected texts, with required thesis. To be given in 1904-'05. 1st term, by appointment. Professor Hopkins.

XII.—LANGUAGE AND LITERATURE OF THE FIFTEENTH CENTURY, with study of selected texts. Professor Hopkins.

XIII.—THE CÆDMONIAN POEMS. Professor Dunlap.

XIV.—ENGLISH GRAMMAR AND ENGLISH GRAMMARS. History and criticism. Professor Hopkins.

B. Courses in Rhetoric.

XV.—INVENTION. Study of representative literary forms through the history and the literature of each, with practice in original production. Library and conference course, with required thesis. To be given in 1904-'05. 2d term, by appointment. Professor Hopkins.

XVI.—LANGUAGE AND THOUGHT.—Problems in the psychology of language. Professor Hopkins.

XVII.—CRITICAL THEORY.—The development of English style. Professor Hopkins.

XVIII.—HISTORY OF RHETORIC AND RHETORICAL TEACHING. Professor O'Leary.

THEMES AND FORENSICS.—Juniors and Seniors in the College and the School of Fine Arts are required to submit to the department of rhetoric and English language in each term two forensics or equivalent theses of about 2000 words each, unless electing courses in that term in which an equivalent amount of written work is required, as certified by an instructor. Students electing courses III, IV or V in rhetoric will be excused from four forensics. Such theses or forensics will be due at the office of the department (room 22, Fraser Hall) on the following dates:* 1904, October 7, December 2; 1905, February 17, April 21.

ENGLISH LITERATURE.

Professor DUNLAP.

Professor HOPKINS.

Associate Professor LAWRENCE.

Associate Professor O'LEARY.

Assistant Professor RAYMOND.

Assistant Professor LYNN.

Assistant Professor BRYANT.

EQUIPMENT.

The department of English literature is well supplied with maps and with a large number of portraits. The library has 3878 volumes upon English literature. There are 624 volumes in the Shakspeare alcove. The department also possesses the Chaucer Society publications, the Spenser Society, the Shakspeare Society, the New Shakspeare Society, the Shakspeare Jahrbuch, *facsimiles* of the quartos, *facsimiles* of the first folio, the Shelley Society, and the Browning Society. The seminary room is large and commodious, and is well adapted for study and investigation.

* For full details with reference to the preparation and presentation of these papers, see special pamphlet of instructions, and the department bulletin-board, adjacent to room 22, Fraser Hall.

ADVICE AS TO CHOICE OF COURSES.

The courses in English literature are designed to meet the needs of various classes of students. There are courses for the general student, for the student of literary history, for the student of journalism, for the student who intends to do graduate work in English literature, and for the student who intends to teach English literature. The instructors invite conference with students, and will assist in planning work to meet special cases.

COURSES FOR UNDERGRADUATES ONLY.

I.—ENGLISH LITERATURE. General history, supplemented with class study of representative authors and with required library reading. Text-books, Simond's *English Literature* and Pancoast's *Standard English Poems*. Open to all students of the College. 1st or 2d terms: 1st term, at 9; 2d term, at 3:30. Professor Lawrence and Mr. Bryant.

II.—ENGLISH LITERATURE. (a) English literature of the eighteenth century. Text-book, Gosse's *History of Eighteenth Century Literature*. Lectures, discussions, essays, and collateral library work. (b) An elementary course in English poetry; text-book, Pancoast's *Standard English Poems*. Lectures, reports, and collateral library work. Open to all students of the College who have had course I. 1st or 2d terms, daily: 1st term, at 2:30; 2d term, at 11:15. Professor Lawrence and Miss Lynn.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

IIIa.—AMERICAN LITERATURE. General history, with especial reference to beginnings and to the work of the best-known writers. Lecture and library course, with class study of representative selections. Given in 1904-'05. 2d term, daily, at 9. Professor Hopkins.

IIIb. AMERICAN LITERATURE. Study of later writers and of current literature. Lecture and conference course, with required readings and reports. Given in 1905-'06. 2d term, daily, at 9. Professor Hopkins.

IV.—CHAUCER AND SPENSER. Lectures upon Middle English grammar, and upon the life and times of Chaucer. Neither Anglo-Saxon nor Middle English required for entrance. Careful reading of the Prologue, *Knights Tale*, and the *Nonne Preestes Tale*. Rapid reading of a large part of the *Canterbury Tales*. Reading and interpretation of part of book I of the *Faerie Queene*. Preparation of two theses. 1st term, daily, at 9. Professor Dunlap.

V.—(a) SHAKSPERE. Lectures upon the life and times of Shakspeare. Study and interpretation of three plays, with special attention

to literary form, plot construction, character study, and Elizabethan grammar. Two hours of library work required daily, and preparation of two theses. 1st term, daily, at 10:15.

V.—(b) SHAKSPERE. Lectures upon the life and times of Shakspeare. Study and interpretation of three plays, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Two hours of library work required daily, and preparation of two theses. 2d term, daily, at 10:15. Professor Dunlap.

VI.—(a) ENGLISH LITERATURE OF THE SEVENTEENTH CENTURY, from Donne to Dryden. Historical and critical study of the works of Herrick, Milton, Herbert, Vaughn, Quarles, Crashaw, Cowley, Waller, Burton, Taylor, Pepys, Walton, Clarendon, and Bunyan. Two hours daily of library work, with two theses during the term. 2d term, daily, at 10:15. Not given in 1904-'05. Mr. Raymond.

VII.—(b) THE GROWTH OF PERIODICALS. A study of the rise of popular opinion as a factor in literature, and the development of democratic ideals. Lectures on the history of literary traditions in the periodicals, and critical study of the individual authors with reference to these traditions. Open to Juniors and Seniors who have had English literature I and II, and either III, VI, VII, VIII, or X. Preparation of two theses required. 2d term, at 4:30. Mr. Raymond.

VIII.—(a) ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Prose. The authors studied will be Swift, Addison, Johnson, Goldsmith, and Burke. Lectures, library work, and the preparation of theses. 2d term, daily, at 1:30. Professor O'Leary.

IX.—(b) THE ENGLISH ESSAY. A study, historical and critical, of the essay as a literary form, from Bacon to the present time. Lectures, theses, and library work. Not given in 1904-'05. Professor O'Leary.

X.—(a) ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Prose, exclusive of the novel. Biographical and critical lectures. The essay. Criticism. History. The authors studied are Lamb, Hazlitt, De Quincey, Landor, Newman, Arnold, Carlyle, Macaulay, Ruskin, Pater, and Stevenson. Two hours of library work daily, and preparation of two theses. 1st term, daily, at 11:15. Professor Dunlap.

X.—(b) ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Poetry. Biographical and critical lectures. The authors studied are Wordsworth, Coleridge, Southey, Shelley, Keats, Byron, Arnold, Tennyson, and Browning. Two hours of library work daily, and preparation of two theses. 2d term, daily, at 9. Professor Dunlap.

XI.—THE ENGLISH NOVEL. A historical and critical survey of

the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction. Two hours of library work daily, and preparation of two theses. 2d term, daily, at 11:15. Professor Dunlap.

XII.—BROWNING. Lectures upon the life and literary period of Browning, with general view of more important works. Interpretative study of shorter poems and two or three of the plays. Two theses required. 1st term, daily, at 10:15. Miss Lynn.

XIII.—POETICS. The theory of poetry, with systematic study of the various poetic types. A large amount of reading illustrative of the epic, ballad, lyric, etc., is required, with the preparation of a thesis. Lectures three times a week; reports and discussions twice a week. 1st term, at 3:30. Professor Lawrence.

XIV.—HISTORY OF THE ENGLISH DRAMA. This course includes the period from the liturgical plays to the closing of the theaters in 1642, omitting Shakspeare. Reading of two or three plays is required each week, with the preparation of a thesis, to be submitted at the end of the term. Lectures three times a week; reports and discussions twice a week. 2d term, at 2:30. Professor Lawrence.

ENGINEERING—CIVIL.

Professor MARVIN.

Assistant Professor HOAD.

Assistant Professor TAYLOR.

For equipment, see under School of Engineering.

Courses VIII to XVI, inclusive, are open to Juniors and Seniors in the College. Courses XI to XVI, inclusive, are open to candidates for the master's degree, when accompanied by such extra work as may be required by the instructor. Courses XVII to XX, inclusive, are open only to candidates for the master's degree.

COURSES FOR UNDERGRADUATES.

V.—SURVEYING. Engineer's instruments, their construction and adjustment. Methods of making and platting land, topographic, mining and hydrographic surveys. Sources of error and the means of controlling the precision of field-work. Leveling and earthwork. Open to all students of the College. 2d term, daily recitations at 11:15, with one-half day per week in field-practice. Mr. Taylor.

VIII.—MASONRY. Character of materials composing masonry. Methods of cutting and dressing stone. Foundations: Cribwork, coffer-dams, caissons, piles and pile-driving, concrete, pneumatic processes, etc. Masonry structures: Culverts, arches, piers, abutments, bridges, etc.; their form, construction, strength, and cost.

Compound arches of concrete and metal. Recitations and lectures. 1st term, (b), daily, at 9. Mr. Taylor.

IX.—ROADS AND PAVEMENTS. A study of the materials for and methods used in the construction and improvement of country roads and city pavements. Earthwork, drainage, the road foundation, the wearing surface, etc. Principles governing the location of roads. The economic importance of the "good-roads movement." Last two-fifths of the 2d term, daily, at 9. Mr. Hoad.

X.—RAILWAY LOCATION. The principles involved in an economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue from traffic, the bonded debt and the corresponding fixed charges for interest, the operating expense, and the dividend-paying capacity of the road. Methods of conducting field-work for preliminary and location surveys. First three-fifths of the 2d term, daily, at 9. Mr. Hoad.

XI.—RAILWAY SURVEYING. A study of the methods of laying out and constructing railways. The setting out of simple and compound curves and calculation of excavation and embankment. Yards, turn-outs, and switches. Easement curves of various types. Calculation of waterways, and methods of staking out foundations for culverts and bridges. This course must be preceded by a general course in surveying. 1st term, daily recitations, at 10:15, with field-practice one-half day per week. Mr. Hoad.

XII.—SANITARY ENGINEERING. The collection, removal and disposal of sewage by various methods. Water-carriage and pneumatic systems. Separate and combined systems. The construction of sewers, outfalls, manholes, and flushing appliances. Ventilation of sewers. Treatment of sewage. The collection and disposal of garbage and other refuse. Garbage destruction and utilization. Street-cleaning. 1st term, (a), daily, at 11:15. Mr. Hoad.

XIII.—SANITARY ENGINEERING. Water-supply. The requisites of a supply as to quality and quantity. The value of chemical and biological analyses and the interpretation of results. Relation of water-supply to the public health. Rainfall and the gathering and storage of surface-water. The collection of ground-water. The use of rivers and lakes as sources of supply. Distributing systems; conduits and pipe-lines, pumping machinery, the flow of water in open channels and closed conduits. The construction of dams and reservoirs. The purification of water. Methods of maintaining the efficiency of existing plants. 2d term, (a), daily, at 11:15. Mr. Hoad.

XIV.—ROOFS AND BRIDGES. Analytical and graphical calculation of stresses in framed structures under various forms of loading.

This course must be preceded by course II in mechanics. 1st term, daily recitations and drawing, 1:30 to 3:30. Professor Marvin.

XV.—BRIDGE DESIGNING. A study of bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course XIV. 2d term, daily recitations and drawing, 1:30 to 3:30. Professor Marvin.

XVI.—HOUSEHOLD ARCHITECTURE. To include, among other things, sanitation, ventilation, decoration, etc., together with lectures on trees, plants and grounds. (Given in 1905-'06.) One term. Professor Marvin.

COURSES FOR GRADUATES ONLY.

XVII.—STRUCTURAL DESIGNING. An advanced course covering cantilever, swing and suspension bridges, skeleton frames for buildings, train-shed roofs, stand-pipes, and elevated tanks. This course is designed to follow course XV. Lectures, recitations, and detail designing in the drawing-room. May be taken either during the 1st or 2d term. Daily, ten hours per week. Professor Marvin.

XVIII.—ENGINEERING MATERIALS. An advanced course, which must be preceded by course II in mechanics. It covers the methods of manufacture of structural materials and the different means and machines used in testing their qualities. The materials considered are cast iron, wrought iron, steel, brick, stone, cements, concrete, and timber. Opportunity will be given for specialization along some particular line, if desired, and considerable experimental work may be done in the testing laboratory. Daily, 1st term. Recitations, lectures, library and laboratory work. Professor Marvin.

XIX.—SANITARY ENGINEERING. An advanced course, to follow courses XII and XIII. The public health. Contagious diseases and methods for destroying them. Bacteriological methods as applied to sanitary work. Influence of sanitary works on public health. Effect of different soils on the drainage of cities and towns and the healthfulness of dwellings. House drainage, plumbing, and plumbing fixtures. Ventilation and heating of public buildings and dwellings. Lectures, recitations, and reading. Daily, 2d term, (α). Professor Marvin.

XX.—GEODESY. Method of making geodetic surveys. Station signals and their location. The measurement of angles and laying out of base lines. Determination of latitude, longitude, time, and azimuth. Instrumental constants and sources of error. Leveling by vertical angles. Precise leveling. Figure of the earth. A knowledge of surveying and calculus is necessary for this course. Daily, 2d term. Professor Marvin.

ENGINEERING—ELECTRICAL.

Professor BLAKE.

Assistant Professor RICE.

For equipment, see under School of Engineering.

Courses I, II and III are open to students of the College who have had the necessary preparation.

COURSES FOR UNDERGRADUATES ONLY.

I.—THEORY OF ELECTRICITY AND MAGNETISM. A mathematical treatment of the general principles involved in direct-current devices and introductory to their application in direct-current machinery. Junior, 1st term, daily, at 10:15. Professor Blake.

II.—THEORY OF ALTERNATING CURRENTS. A mathematical treatment of the general principles involved in alternate-current phenomena and introductory to their application in polyphasal machinery. Junior, 2d term, daily, at 9. Professor Blake.

III.—DYNAMO MACHINERY. A briefer course than III and IV (School of Engineering), covering both direct- and alternating-current machines. Must be preceded by physics IV and V and calculus. Junior, 1st term, daily, at 10:15. Mr. Rice. (Course III is course XIV in School of Engineering.)

ENGINEERING—MECHANICAL.

Professor DIEMER.

For equipment, see under School of Engineering.

Courses VI and X are open to Juniors and Seniors in the College. Courses VI to IX, inclusive, are open to graduate students who are prepared for them.

VI.—THERMODYNAMICS. Study of the relations of heat phenomena. Theory of gases and vapors. Theory of heat engines and discussion of heat efficiencies. Must be preceded by physics I and II and calculus. Lectures, recitations, and problems. Texts, Reeves's Thermodynamics, and Spangler's Notes on Thermodynamics. 1st term, four days a week, at 11:15. Professor Diemer.

VII.—ENGINE GRAPHICS. Dynamics and design of a high-speed steam-engine. Graphical solution. Text, Klein's High-speed Steam-engine. Junior, 2d term, Mondays, 2:30 to 5:30. Professor Diemer.

VIII.—ENGINE DESIGN. Making working-drawings for a high-speed steam-engine. Text, Whitham's Steam-engine Design. Senior, 1st term, Mondays and Wednesdays, 3:30 to 5:30. Professor Diemer.

IX.—ADVANCED MACHINE DESIGN. Advanced study of kinematics of machinery; mechanical power-transmission systems; design

of complete machine tools, hoisting apparatus, or other form of machines. Senior, 2d term, Mondays and Wednesdays, 3:30 to 5:30. Professor Diemer.

X.—HYDRAULIC MACHINERY. Study of hydraulic engines, water-wheels, turbines and impulse wheels, pumps and rams, elevator machinery, and special applications of hydraulic power. 1st term, (b), four times a week, at 10:15. Must be preceded by mechanics IV. Text, Barr's Pumping Machinery. Professor Diemer.

ENGINEERING—MECHANICS.

Professor MARVIN.

Assistant Professor HOOD.

Assistant Professor TAYLOR.

For equipment, see under School of Engineering.

Courses I to V are open to Juniors and Seniors. When accompanied by such extra work as may be required by the instructor, they are also open to candidates for the master's degree.

I.—MECHANICS. A study of the laws of statics and dynamics. Action of forces upon bodies and the resulting motions. 1st term, daily, at 11:15. Professor Marvin.

II.—STRENGTH OF MATERIALS. The theory of resistance to stress and applications to engineering construction. 2d term, four hours per week, at 10:15. Professor Marvin.

III.—TESTING OF MATERIALS. A laboratory course to accompany course II. The testing of iron, steel, wood and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. 2d term, four hours a week, Tuesday, Thursday, or Saturday. Mr. Hood.

IV.—HYDRAULICS. A study of the laws governing the pressure and flow of liquids and gases and the force of and resistance to their motion. 1st term, (a), four hours a week, at 10:15. Mr. Taylor.

V.—HYDRAULIC LABORATORY. A course to accompany course IV and the course in hydraulic machinery. Experimental work with the flow of water over weirs, through orifices and pipes, and in testing hydraulic machinery. 1st term, two hours a week. Tuesday, Thursday, or Friday. Mr. Taylor.

ENGINEERING—MINING.

Professor HAWORTH.

Assistant Professor CRANE.

EQUIPMENT.

The mining department is well equipped for giving practical instruction. It has a large museum of mining apparatus of all kinds, obtained directly from the manufacturers, and especially made for illustration and study, as follows: Drills—all kinds and natures of hand drills, rotary drills, and diamond drills, with different kinds of cartridges for "shooting" oil-wells. Powders: A full set of samples of all the different kinds of blasting-powders and fuses. Screens: Samples of all the different kinds and styles of screenings used in all kinds of mills for ore-dressing. Pumps: Model pumps of all kinds, especially made for illustration purposes. Lamps: Mining lamps of all kinds now in use or on the market. Ropes and cables: Samples of all the leading varieties of metallic and fiber ropes and cables used for underground and surface haulage. Water-pipes and valves: A large supply of samples of metallic and wooden water-pipes and steam-pipes, with an especially good collection of water and steam valves, full sized, and especially prepared by the manufacturers for this museum. In addition to the above, there is a good number of carefully prepared models of mines, illustrating underground development, with different modes of shafting, tunneling, stoping, timbering, etc. These models are carefully made, at a great expense, and will be increased in number as rapidly as possible.

The ore-dressing laboratory, located in the west basement of the Chemistry Building, contains stamps, jigs, rolls, crushers, screens (power and hand), hydraulic classifiers, spitz kasten and spitz luten, an automatic ore-feeder, slime and Wilfley table, a pulverizer, besides facilities for panning, vanning and sampling ores. It affords opportunities for practical training in making laboratory and field tests on ores. This work is supplemented by the mining museum, which contains a collection of implements and apparatus used in mining and milling operations, as well as models and mill products illustrating methods and processes.

ADVICE AS TO CHOICE OF COURSE.

Course I should be chosen by students desiring a general knowledge of explosives and their application to mining and kindred operations, of methods of prospect drilling for minerals, oil, or gas, and of methods of sinking shafts and driving tunnels.

Course II is more technical, and is especially adapted to the needs of those persons interested in mill-work and the separation of all kinds of useful minerals from their gangues. It includes a de-

tailed study of reducing, sizing, classifying and concentrating machinery.

COURSES FOR UNDERGRADUATES ONLY.

I.—MINING. (*a*) *Excavating, Boring, Blasting, and Surveying.* Excavation: Excavation of various kinds of earth, such as soils, clays, sands, rocks, etc., with various kinds of tools and machinery employed for same. Boring: Methods and appliances for prospect drilling and for drilling oil-wells and gas-wells, including different varieties of tools and machinery employed, difficulties to be encountered, and conditions under which prospect boring or drilling is profitable. Blasting: A study of the various kinds of explosives used in mining and excavating, such as black powder and the various kinds of the nitroglycerins and other explosives, including their manufacture and modes of use, and precautions necessary in handling them. Mine surveying: General principles of underground surveying and relation between underground and surface surveys; the construction of mine maps and mine sections. To be supplemented by field-work during summer vacation.

(*b*) *Shafting, Tunneling, and Mine Support.* Shafting: Shaft-sinking; methods employed in sinking shafts through soft and hard materials, dry or water-bearing, including the hoisting and handling of excavated material, and methods of shaft-timbering and lining. Tunneling: Methods of driving tunnels through different kinds of earth and rock, including drainage and ventilation, tunnel supports and linings, and methods of choosing locations for tunnels. Mine supports: Including a general study of the various methods of supporting all forms of underground openings by timbers, masonry, metallic linings, and other methods peculiarly adaptable to special conditions. Junior, 1st term, daily, by appointment. Mr. Crane.

II.—ORE DRESSING. General methods and theories for separating different ores from foreign materials and for washing coal, clays, and other products. It includes a study of hand-picking, crushing, screening, and jigging, and a study of the machinery for the same; the concentration of slimes; and milling methods for gold and silver ores. Lectures and laboratory work. Junior, 2d term, daily, by appointment. Mr. Crane.

ENTOMOLOGY.

Associate Professor HUNTER.
Miss WISE.

EQUIPMENT.

The two laboratories are arranged so that one is devoted to the introductory courses and the other to the research courses. The former is equipped with both compound and dissecting microscopes,

and such accessory apparatus as is required by the students. The latter contains, in addition to special apparatus, such as precision sliding microtome, compound microscopes, paraffin baths, etc., the department library. In addition to the collection of books here shelved, there are the important foreign and English periodicals, as well as monographs and other separata.

ADVICE AS TO CHOICE OF COURSES.

The following courses are designed to meet the needs of three classes of students, viz.:

(1) Those who in a general education desire some knowledge of the subject-matter and general principles of animal biology, as illustrated by the lower forms. For this class, courses I and II are adapted.

(2) Those preparing to become teachers and investigators engaged in research work. After the fundamental courses, the aims of each student will largely determine the selection of advanced courses. The requirements for those expecting to teach in secondary schools are courses I, II, and III.

(3) Those preparing for the study of medicine. Upon the completion of courses I and II, courses III and IV are complementary, both in subject-matter and technique, to regular work of the medical course.

COURSES FOR UNDERGRADUATES ONLY.

I.—ENTOMOLOGY. This course includes a general survey of the morphology, distribution, classification and behavior of the orders of insects, mainly. The work in the laboratory consists (1) of an anatomical study of one or more types, followed by a comparison of each type studied with closely allied forms. (2) Exercises in classification of orders and families. The laboratory work is conducted by means of typewritten laboratory directions prepared by the instructors. A series of lectures accompany the laboratory work. Text, Hertwig's *Manual of Zoölogy*. 1st term, daily, 1:30 to 3:30. Open to all students of the College. Professor Hunter and Miss Wise.

II.—SYSTEMATIC COURSE. *Insecta*. This course gives special prominence to the systematic position of the orders studied. The laboratory work consists of (a) determination of species; (b) careful morphological study of organs with special reference to their evolution; (c) when possible, a study of the insects of one or more forms. In addition to the text, monographs and current literature of special groups will be used. 2d term, daily, 1:30 to 3:30. Open to Juniors and Seniors who have taken course I. Professor Hunter.

COURSES FOR GRADUATES AND ADVANCED UNDERGRADUATES.

III.—TEACHER'S COURSE. Laboratory course adapted to those who expect to teach. Lectures upon life-histories, insect relationships, choice of materials, and modes of presentation. Field-work on habits of social insects. 1st term, two hours daily. Not given unless eight register. Professor Hunter.

IV.—Seminary, one hour a week throughout the year. Designed for discussion of special subjects, and reports upon the more notable current advances in this branch of science.

COURSES FOR GRADUATES ONLY.

V.—ORIGINAL INVESTIGATION. Research work in parthenogenesis. Throughout the year, by appointment. Professor Hunter

VI.—ORIGINAL INVESTIGATION. Taxonomy, Insecta. Critical study of Kansas fauna. This course has for its object a survey of the species found in the state. By appointment, throughout the year, including the summer months. Professor Hunter.

VII.—MORPHOLOGICAL DEVELOPMENT. Problems assigned with reference to the attainments of individual students. Throughout the year, by appointment. Professor Hunter.

FREE-HAND DRAWING AND DESIGN.

Professor GRIFFITH.

EQUIPMENT.

The studios of the drawing department, on the third floor of Snow Hall, are well equipped with a great many casts from the antique; books and plates upon the theory and history of ornament; a fine printing-press designed for color-printing, and used by students to duplicate their designs; easels, and drawing-boards.

The classical museum and the museum of natural history offer an abundance of material for the use of students in design.

ADVICE AS TO CHOICE OF COURSES.

The following courses are optional: Technical students, to whom some drawing is essential, are advised to take course I. Students wishing training in artistic perception and graphic expression, for its general culture value, must take course I, followed by courses II and III.

COURSES FOR ADVANCED UNDERGRADUATES.

I.—FREE-HAND DRAWING. Drawing with pencil and charcoal from the cast and objects in still-life, which aims to teach the student to construct form in a simple and correct manner; drawing with pen and ink and water-colors, for illustrative and reproductive

processes. One term, three hours, daily, with one full-term credit. Junior and Senior.

II.—ORNAMENTAL DESIGN. The anatomy of pattern. 1st term, (*a*), Monday, 8 to 9. The planning of ornament. (*b*), 2d term, Monday, 8 to 9. Must be preceded by course I. Junior, with one full-term credit for the entire year's work.

III.—ORNAMENTAL DESIGN. The application of ornament. 1st term, (*a*), Wednesday, 8 to 9. The history of ornament. 2d term, (*b*), Wednesday, 8 to 9. Senior, with one full-term credit for the entire year's work.

FRENCH.

(See Romance Languages and Literatures.)

GEOLOGY.

Professor HAWORTH.

EQUIPMENT.

The library is of first importance for equipment in geology, and apparatus and museums next. The library includes practically all the reports of public surveys made in America, both national and state, and all the leading text-books and special treatises by the leading authorities of the world. Of particular importance is the large number of topographic sheets and folios of the final mapping of the United States Geological Survey. The geological and mineralogical museums are described elsewhere in this catalogue, to which the reader is referred. Large numbers of maps and papier-mache models of geological and topographic land forms, especially chosen from those now on the market, add greatly to the equipment for good, effective work.

ADVICE AS TO CHOICE OF COURSES.

The following courses in geology are designed to meet the requirements of two classes of students: those wishing to become working geologists, and those wishing only a general outline of the subject as a part of a liberal education. In the former case the student is advised to take all the courses offered, as nearly as possible in the order given, or possibly IV might be brought in at any time after I. Should the student desire to give only a limited time to the study, he should begin with I, after which he may take II, III, or IV, in any order, with IV most desirable for those who take only a single year's course.

Course I is open to all students of the College, and courses I, II, III, IV and V are open to Juniors and Seniors: courses VI, VII

and VIII are open to graduate students only; and course IX to advanced undergraduate and to graduate students.

COURSES FOR UNDERGRADUATES.

I.—ELEMENTS OF PHYSICAL GEOLOGY. A study of the elementary principles of general geology, including physical conditions throughout geologic time and the formation of continents; nature and origin of the different kinds of rocks and the rock-forming materials; the destructive process of erosion or denudation, and the economic products obtained from the ground by the various mining operations. 1st term, lectures, daily, at 3:30. Professor Haworth.

II.—AREAL GEOLOGY. This course is an extension of course I, with special reference to the stratigraphy of land areas, continental development, the history of animal and plant life upon the earth, and the uses of fossil forms in the identification and correlation of geologic horizons. A special study will also be made of field methods in geology in organizing and conducting geological investigations and geological surveys. It should be taken by all students who contemplate teaching geology or making geological investigations. Must be preceded by course I. 2d term, lectures and library work, daily, at 10:15. Professor Haworth. For undergraduates or graduates.

III.—ECONOMIC GEOLOGY. A general study of the metallic and non-metallic products of the mine, quarry, and well, considered from a scientific and a practical standpoint, including the nature, origin, amount and geographic and geologic distribution of the same. Must be preceded by course I, or mineralogy I. 1st term, lectures and library work, daily, at 9. Professor Haworth.

IV.—PHYSIOGRAPHY. A study of the general principles of physiography, with detailed studies of specific areas in latter part of course; including earth movements, or general elevation and depression of land areas, rock disintegration, origin and nature of drainage systems and the life-history of rivers, and origin of surface features and cause which have produced them. Must be preceded by course I. 2d term, lectures and library work, daily, at 9. Professor Haworth.

V.—DYNAMIC GEOLOGY. A brief course on the elementary principles of dynamic geology, supplementary to course I. Must be preceded by course I and, if possible, by mineralogy and petrography I and III. 1st term, lectures, daily, at 10:15. Professor Haworth.

COURSES FOR GRADUATES.

VI.—DYNAMIC GEOLOGY. Graduate students in geology will be provided with opportunity to pursue the study of dynamic geology to any extent desirable, dependent upon the previous training of the

student and the object in view. The work may be continued through one or more years, and may be made a major or minor subject for the degree of master of arts or doctor of philosophy. By appointment. Professor Haworth.

VII.—PHYSIOGRAPHY. Opportunity is offered graduate students to pursue the study of physiography for one or more years, dependent upon their previous training and end in view. It may be elected either as a major or minor for the degree of master of arts or doctor of philosophy. By appointment. Professor Haworth.

VIII.—ECONOMIC GEOLOGY. Opportunity is offered graduate students to pursue the study of the subject throughout the year for one or more years, and to choose it as a major or minor subject for the degree of master of arts or doctor of philosophy. By appointment. Professor Haworth.

Students electing either of the above courses as a major for the degree of doctor of philosophy must devote at least half their time to it for three years, and must present a dissertation embodying the results of original work done in connection therewith, in accordance with the general conditions governing the granting of this degree by this University and with the requirements of the department of geology.

IX.—SUMMER FIELD-WORK. Opportunity is offered advanced students in geology, either graduate or undergraduate, to do field-work in geology in connection with the University Geological Survey of Kansas, under the guidance of the department of geology, for which credit will be given the same as for work done in the classroom and laboratory. By appointment. Professor Haworth.

GERMANIC LANGUAGES AND LITERATURES.

Professor CAREUTH.

Assistant Professor ENGEL.

Assistant Professor CORBIN.

Mr. MUENTER.

Mrs. SPANGLER, Fellow.

EQUIPMENT.

The German department has an excellent stereopticon and several hundred stereopticon slides, illustrating scenery, costumes and biography; a small number of excellent photographs and prints in frames; a complete set of twenty German wall-maps, showing the various separate states; and a few busts. There are 2200 volumes in the library of the German department, and five philological and seven literary journals are received.

There has just been purchased a valuable collection of 3000 unbound dissertations and school programs, covering all fields of Ger-

manistic scholarship. With the present library and this acquisition of special studies, the German department will be prepared to encourage graduate study at the University of Kansas in Germanic languages.

The Deutscher Verein owns a piano, which is used for accompanying the German songs of the Verein.

ADVICE AS TO CHOICE OF COURSES.

For the benefit of those who plan to become teachers of German in high schools and academies the following course is outlined, based upon an entrance requirement of Latin and English. The amount of German thus acquired is scanty. If possible, the student should come with German I and II from the preparatory school. In that case the German courses in this outline would be advanced by so much, and in the Junior and Senior years two more optionals in German should be taken. The department will not recommend for teaching positions those who have less than the acquirement here indicated. The course conforms to the general requirements for the Freshman and Sophomore years.

Freshman Year.—First term: German I, Latin I, one elective (depending on the work done in high school). Second term: German II, Rhetoric I, one science.

Sophomore Year.—First term: German III, French I, one science. Second term: German IV, French II, one science.

Junior Year.—First term: German V, French III, Greek XVI or Latin II. Second term: German VI, French IV, Latin III or one other elective.

Senior Year.—First term: German VII or IX, French V or Latin or Education, one elective. Second term: German XVII, two electives.

Courses I to VI, inclusive, are open to all students of the College. Courses VII to XVI are open to both undergraduates in the School of Arts and to graduate students. Course XVII is open to Juniors and Seniors only. The full amount of Latin, 1, 2, 3, for entrance is required as preparation for German I.

COURSES FOR UNDERGRADUATES ONLY.

I.—OUTLINE OF GRAMMAR. The first twenty-four lessons of Otis, with composition exercises. Carruth's Reader, about fifty pages. 1st term, daily, at 8, 9, 11:15, and 2:30. Professor Carruth, Mr. Engel, Miss Corbin, and Mr. Münster.

Division 1 is for students who intend to make German a major study. In this more insistence will be laid upon speaking German. Division 2 is for students who expect to take only a minimum of German. The other divisions will be determined by convenience of hours alone.

II.—CARRUTH'S READER, completed, ZSCHOKKE, KLEIST, HEYSE, (100 pp.), and SCHILLER'S WILHELM TELL (complete). Also special exercises in case government and auxiliary verbs, and sight-reading. 2d term, daily, at 8, 9, 11:15, and 2:30. Professor Carruth, Mr. Engel, Miss Corbin, and Mr. Münter. Divisions as in German I.

III.—LESSING'S MINNA VON BARNHELM. Geschichte des 30-jährigen Krieges. Outline of German literature in dictations and lectures. Sight-reading. 1st term, daily, at 8, 9, 11:15, and 3:30. Mr. Engel, Miss Corbin, and Mr. Münter.

IV.—(a) SCHILLER'S WALLENSTEIN (complete). 2d term, daily, at 8, 9, 11:15, and 3:30. Mr. Engel, Miss Corbin, and Mr. Münter.

IV.—(b) GERMAN COMPOSITION. Translation of connected English. Poll's or v. Jagemann's Composition. 2d term, daily, at 11. Mr. Engel and Miss Corbin. This course may be taken as a substitute for either IV, V, or VI.

V.—GOETHE'S FAUST (parts I and II). Professor Carruth and Miss Corbin. 1st term, daily, at 11:15.

VI.—LESSING'S NATHAN DER WEISE, SCHILLER'S DIE BRAUT VON MESSINA. 2d term, daily, at 10:15 or 11:15. Professor Carruth and Mr. Engel.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

VII.—GERMAN LITERATURE. An outline history. Lectures, the class following Scherer, Francke, or Gostwick and Harrison. Essays and criticism by members of the class. Open only to students who have had courses III and IV. 1st term, daily, at 10:15. Professor Carruth.

VIII.—GERMAN LITERATURE OF THE EIGHTEENTH CENTURY. Klopstock, Wieland, Lessing, Herder, Goethe, and Schiller. Reading of chief works, with reviews. 2d term, daily, at 10:15. Professor Carruth.

IX.—GERMAN HISTORICAL NOVELS. Hauff, Scheffel, etc. Careful reading in class of one work by each author; others outside. Lectures on the history of the novel and on methods and schools in fiction. Theses on separate authors and on the whole course, by members of the class. 1st term, daily, at 10:15. Professor Carruth. Not given in 1904-'05.

X.—GERMAN HISTORICAL NOVELS (continued). Freytag, Dahn, etc. 2d term, daily, at 10:15. Professor Carruth. Not given in 1904-'05.

Courses XI, XII, XIII, XIV, XV and XVI are primarily for graduates.

XI.—(a) HISTORY OF THE GERMAN LANGUAGE. Introduction to

philological study. Lectures and library work. 1st term, daily, at 2:30. Half course. Professor Carruth.

XII.—GOTHIC. Phonetics, grammar, and translation. 2d term. By appointment. Professor Carruth.

XIII.—(b) OLD NORSE. Noreen's *Altnordische Grammatik*; Vigfusson and Powell's Reader. 1st term, daily, at 2:30. Half course. Professor Carruth.

XIV.—MIDDLE HIGH GERMAN. Paul's *Mittelhochdeutsche Grammatik*. *Nibelungenlied*. Hartmann, *Der arme Heinrich*. Selections from Walther von der Vogelweide. Lectures. 2d term. By appointment. Professor Carruth and Mr. Engel.

XV.—THE ROMANTIC SCHOOL IN GERMANY. Work concentrated on lyric poetry. 2d term, daily, at 4:30. Miss Corbin. Not given in 1904-'05.

XVI.—LUTHER AND THE SIXTEENTH CENTURY. Reading and grammatical study of the German literature of the Reformation, preceded by an outline of historical German grammar. 2d term. By appointment. Professor Carruth and Mr. Engel.

XVII.—TEACHER'S COURSE. Advanced grammar, with theory and practice of language teaching. Intended especially for those who desire to fit themselves for teaching German in high schools. Open only to the best students of the department. 1st (and 2d) terms, daily. By appointment. Professor Carruth and Mr. Engel.

XVIII.—THE LYRICS AND BALLADS OF GÖTTE AND SCHILLER. 2d term, daily, at 4:30. Miss Corbin. This course alternates with XV, and is offered for 1904-'05.

GREEK.

Professor WILCOX.

Associate Professor STERLING.

EQUIPMENT.

Eighteen casts of sculpture, four models, a relief-map, wall-maps, 650 photographs, 480 plates (many colored), 47 illustrated folios, 2150 volumes in library, 14 current periodicals, 1800 stereopticon slides.

ADVICE AS TO CHOICE OF COURSES.

Those who aim to become teachers of Greek should take the courses in order, from I to X, or as many of them as they have not had before entering the University. Prospective teachers of Latin should take them in the same order. Students preparing for the ministry will find it best to follow the same plan, and take the course in advanced New Testament Greek in addition, or in place of the last course in classical Greek they might otherwise take. Stu-

dents who aim simply at reading the New Testament in the original for their own pleasure and profit can accomplish that by taking courses XI and XII. Students of science and English may get in course XIV, in one term, a good working knowledge of the scientific and other English words that are derived from Greek. Students of all literatures, who can give no more time to Greek, may get a very good idea of the content of Greek literature, and especially a valuable knowledge of mythology, from course XVI. Those who desire an introduction to the art of all periods may get it in course XVII. Those who wish to take Greek for general culture or discipline should take the courses in the order I to X.

COURSES FOR UNDERGRADUATES ONLY.

I.—ELEMENTARY GREEK. Gleason's Greek Primer or White's First Greek Book. 1st term, daily, at 9. Professor Sterling. Open to all students who enter without Greek.

II.—XENOPHON'S ANABASIS, or equivalent prose. Continuation of course I. 2d term, daily, at 9. Professor Sterling.

III. HOMER'S ILIAD, Seymour's School Iliad, or Benner's Selections from Homer's Iliad, Jebb's Introduction to the Iliad and Odyssey. Sight-reading in the New Testament. 1st term, daily, at 9. Professor Wilcox.

IV. HERODOTUS, selections. Homer's Odyssey, books 9 to 12. Sight-reading in the New Testament. 2d term, daily, at 9. Professor Wilcox.

V. PLATO AND DEMOSTHENES. The Apology and Crito, and the Philippians. Sight-reading. 1st term, daily, at 11:15. Professor Sterling.

VI. GREEK TRAGEDY. The Antigone of Sophocles, Medea or Iphigenia in Tauris of Euripides, and Prometheus of Æschylus. Sight-reading. Lectures on the Greek theater. 2d term, daily, at 11:15. Professor Sterling.

XI. ELEMENTARY NEW TESTAMENT GREEK. Huddilston's Essentials of New Testament Greek. 2d term, daily, at 10:15. Professor Sterling. Open to all who enter without Greek.

XII. NEW TESTAMENT GREEK. Reading of select passages in Westcott & Hort's text. 1st term, daily, at 10:15. Given in 1905-'06. Professor Sterling.

XIII. ADVANCED NEW TESTAMENT GREEK.. Huck's Synopse. Critical interpretation. Special studies. Given in 1905-'06. 2d term, daily. Professor Wilcox.

XIV. THE GREEK IN ENGLISH. The elements of Greek with special reference to English. This course covers the elements of in-

flection and syntax, and serves as an introduction to the following course. 2d term, daily, at 10:15. Professor Sterling. Open to Juniors and Seniors who have had no Greek.

XV. ATTIC GREEK. Stories, legends, and selections from prose authors. Translation; so much grammar only as is required by the text read. 2d term, daily, at 8. Professor Sterling.

Courses II to VI are open to all students of the College, and XII and XIII are open to Juniors and Seniors, who are prepared for them.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

VII.—THUCYDIDES AND SELECTIONS FROM GREEK HISTORIANS IN WILAMOWITZ-MÖLLENDORFF'S *LESEBUCH*. Critical interpretation, rapid reading, sight-reading. Prose composition. Given in 1904-'05. 1st term, daily, at 10:15. Professor Wilcox.

VIII.—LYRIC POETRY. SMYTH'S GREEK MELIC POETS. Sight-reading. Prose composition. Given in 1904-'05. 2d term, daily, at 10:15. Professor Wilcox.

IX.—THE CLOUDS OF ARISTOPHANES, MEMORABILIA OF XENOPHON, AND GORGIAS OF PLATO. Critical interpretation. Rapid reading. Prose composition. Given in 1903-'04. 1st term, daily, at 10:15. Professor Wilcox.

X.—THE FROGS OF ARISTOPHANES, ELECTRA OF EURIPIDES, AND AGAMEMNON OF ÆSCHYLUS. Greek literary criticism. Prose composition. Given in 1903-'04. 2d term, daily, at 10:15. Professor Wilcox.

XVI.—HISTORY OF GREEK LITERATURE THROUGH TRANSLATIONS. Lectures, recitations, private reading, writing of themes. 1st term, daily, at 11:15. Professor Wilcox.

XVII.—HISTORY OF GREEK ART. Lectures, recitations, private reading, writing of themes. 2d term, daily, at 11:15. Professor Wilcox.

XVIII.—GREEK SYMPOSIUM. Lectures, illustrated by stereopticon, on subjects of more general or more special interest than regular class work, or of such a character as to need a larger amount or different kind of illustrative material than is available in the classroom. The main subjects the last four years have been Greek architecture and its continuation and revival in later and modern times; Greek sculpture; famous Greek sites and scenes; and the latest excavations on Greek soil. Once a week throughout the year. Professor Wilcox. Required of all Greek students. Open to all others, but without credit.

HARMONY AND MUSICAL ANALYSIS.

Professor SKILTON.

Courses I to III are open to graduate students and Juniors and Seniors, the work counting as one full course.

I.—HARMONY. The study of tone relations, scales, intervals; the formation and progression of chords, concords and discords, and modulations. The practical work consists of the harmonization of short musical sentences, chants, chorals, and original melodies; the study of all chord progressions at the piano and their recognition by the ear. Throughout the year, Tuesday and Friday, at 2:30. Professor Skilton.

II.—HARMONY. The study of inharmonic tones (suspensions, passing notes, etc.), the harmonization of original melodies, with practical applications at the piano. 1st term, Tuesday and Friday, at 3:30. Professor Skilton.

III.—MUSICAL ANALYSIS. The simple homophonic and polyphonic forms; the phrase, period, two-part song, three-part song, and song with trio. Mendelssohn's Songs without Words, with original work. The two- and three-voiced inventions of Bach. 2d term, Tuesday and Friday, at 3:30. Professor Skilton.

AMERICAN HISTORY AND GOVERNMENT.

Professor HODDEE.

Mr. CARPENTER, Fellow.

EQUIPMENT.

The University library is supplied with all the important secondary authorities in American history, and with a considerable amount of source material. Where original editions of early books have been unobtainable, such reprints as Thwaites's "Jesuit Relations" and the Goldsmid and Macklethorpe editions of "Hakluyt" have been substituted. The sets of Kansas state documents, of Congressional debates and of American state papers are complete. The set of congressional documents begins with the second session of the twenty-eighth Congress. For the colonial period, the library has the colonial series of calendars of British state papers, the New York colonial documents, the New Jersey archives and other similar sets, and for the period of discovery the works of Harris and the atlases of Nordenskiöld and Kretschmer. Particular attention has been given to the collection of books relating to Kansas and the trans-Missouri region, and a collection of American travels has been begun. Free access to all but the rarest books is given to students in the history and sociology reading-room. The supply of maps and atlases for class and reference purposes is adequate.

ADVICE AS TO CHOICE OF COURSES.

The department provides two years of continuous daily work in American history and government, covering colonial history and constitutional and international law during the first year and the political and constitutional history of the United States during the second. A seminary for original research is provided for students who have completed the two years' course. Students desiring to give less than two years to American history may take any of the courses desired, subject only to the limitation that the courses in "Presidential Administrations" are open only to Seniors and graduates, unless preceded by constitutional law. No short general course in American history is offered upon the theory that it is better to cover a part of the field thoroughly than the whole superficially.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

I.—AMERICAN COLONIAL HISTORY. This course covers the discovery of America, the origin and development of the English colonies, the causes and results of the revolution, and the establishment of government in the state and nation. 1st term, daily, at 2:30. Professor Hodder.

II.—AMERICAN CONSTITUTIONAL LAW. Study of the constitution of the United States as it has been judicially construed. Based upon Cooley's Principles of Constitutional Law. 2d term, (a), daily, at 2:30. Professor Hodder.

III.—PUBLIC INTERNATIONAL LAW. Statement of fundamental principles, illustrated by cases drawn from American diplomatic history. 2d term, (b), daily, at 2:30. Professor Hodder.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

IV.—PRESIDENTIAL ADMINISTRATIONS. History of the United States from Washington to Jackson. This course treats topically the most important phases of American history. The principal lines of study are financial and tariff history, foreign relations, the rise and growth of political parties, the history of the slavery controversy, and the expansion of the United States. Open to Seniors and Graduates, and to Juniors who have completed course II creditably. 1st term, daily, at 3:30. Professor Hodder.

V.—PRESIDENTIAL ADMINISTRATIONS. History of the United States from Jackson to Lincoln. Continuation of course IV. It is intended to supplement the study of this period by a brief outline of the principal events since the civil war. 2d term, daily, at 3:30. Professor Hodder.

COURSES FOR GRADUATES ONLY.

VI.—AMERICAN HISTORICAL SEMINARY. Original investigation of special topics, the results of which must be embodied in a thesis. 1st and 2d terms, Saturdays, 10 to 12. Professor Hodder.

VII.—ADVANCED CONSTITUTIONAL LAW. Study of cases. Based upon Boyd's Cases in American Constitutional Law. 1st term, Saturdays, 8 to 10. Professor Hodder.

VIII.—ADVANCED INTERNATIONAL LAW. Study of cases. Based upon Snow's Cases and Opinions in International Law. 2d term, Saturdays, 8 to 10. Professor Hodder.

EUROPEAN HISTORY.

Professor ABBOTT.

Assistant Professor BECKER.

Mr. SEYSTER, Fellow.

EQUIPMENT.

The department of European history is provided with over fifty large wall-maps, forty smaller maps, besides historical charts and the more important historical atlases, together with a considerable number of framed portraits, engravings, and photographs. With the departments of American history, sociology, and economics, it occupies the large reading and seminary room on the second floor of the Spooner Library, and with the former it shares a smaller room for the use of more advanced students in investigation and seminary work. The general collection of books in European history comprises, in addition to a reference library, such sets as the *Monumenta Historica Germaniæ*, the *Parliamentary History*, *Reports of the Historical MSS. Commission*, the *English statutes at large*, the *journals of the House of Lords and of the House of Commons*, and the *series of English state papers, domestic, foreign and colonial*, now being completed as rapidly as possible.

ADVICE AS TO CHOICE OF COURSES.

The courses in European history are designed for three classes of students—those desiring only a general knowledge of history, those desiring to use their history in connection with work in other lines, and those desiring to specialize in history. The courses are so arranged as to offer continuous work along several lines. A course in general European history should cover courses II, III, IV, V, VII, and VIII, inclusive. In English history, courses I, VI, and XIII are to be noted. For classical students, courses II and X will be found of special importance. For those specializing in modern languages, courses IV, V, VII and VIII will best supplement the work in French, German, Italian, and Spanish; for those specializing in

English, courses I, VI, X, and XIII. The attention of those working in American history is especially called to the courses in English history and colonization, namely, I, VI, and IX, as well as to course VIII in modern Europe. Special attention of those doing most of their work in history and those expecting to teach history is called to courses XIV and XV in historical method. In general, it is expected that those intending to do work in European history in the Junior and Senior years will have had at least one of the courses offered in the Sophomore year. Those expecting to receive recommendations to teach history will find it necessary to have taken courses I, II, III, IV, and V, at least two advanced courses, and the teachers' course, No. XV.

COURSES FOR UNDERGRADUATES ONLY.

I.—ENGLISH HISTORY. Open to all students of the College. Designed as an introduction to all history work of the Junior and Senior years. Recitations, with lectures and assigned reading. 1st term, daily, at 8 and 2:30. Mr. Becker.

II.—GREEK HISTORY. Open to all students of the College. Designed, with the following course, as an introduction to Junior and Senior work in European history, and to accompany work in the classical departments. Recitations, with lectures and assigned reading. 1st term (*a*), daily, at 9. Mr. Becker.

III.—ROMAN HISTORY. Open to all students of the College. Designed, with the preceding course, as an introduction to Junior and Senior work in European history, and to accompany work in the classical departments. Recitations, with lectures and assigned reading. 1st term (*b*), daily, at 9. Mr. Becker.

IV.—MEDIÆVAL HISTORY. Open to all students of the College. The history of Europe from the fall of Rome to the Renaissance. A general course, designed, with the following course, especially as an introduction to work in modern European history. Recitations, lectures and assigned reading. 2d term (*a*), daily, at 9. Mr. Becker.

V.—RENAISSANCE AND REFORMATION. A continuation of the above, but may, by special permission at the beginning of the term, be taken separately. The history of Europe from the beginning of the Renaissance to 1648. Recitations, lectures, and assigned reading. 2d term (*b*), daily, at 9. Mr. Becker.

VI.—ENGLISH CONSTITUTIONAL HISTORY. A general course in the elements of the constitution and administration of England, with special reference to modern English government, and its constitutional principles at home and abroad. Open to Juniors and Seniors who have had an elementary course in English history, *i. e.*, course I, or an equivalent. Given in 1904-'05. 2d term, daily, at 1:30. Professor Abbott.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

VII.—HISTORY OF EUROPE FROM 1648 TO 1815. Special stress will be laid on the French Revolution and the Napoleonic era. Particularly recommended to Juniors. With additional requirements of reading and reports, may be counted as a graduate course. Lectures, recitations, and assigned reading. 1st term, daily, at 10:15. Professor Abbott.

VIII.—POLITICAL AND CONSTITUTIONAL HISTORY OF MODERN EUROPE. The history of Europe, including that of England, from 1815 to the present. Course VII, or one year's work in history (or an equivalent), will be required for admission to this course. Lectures, recitations, and assigned reading. 1st term, daily, at 11:15. Professor Abbott.

IX.—EUROPEAN COLONIZATION. The history of Europeans outside of Europe, from the sixteenth century to the present. A study of exploration, conquest, and settlement, together with the history of European peoples, colonies, and dependencies (Spanish America, Canada, Australia, India, etc.) Special attention will be given to the growth of the British empire, particularly in the nineteenth century. Course VI, or one year's work in history (or an equivalent), will be required for admission. Lectures, recitations, and assigned reading. 2d term, daily, at 8. Professor Abbott.

X.—EUROPEAN CONSTITUTIONS. A study of the constitutional development of the principal European nations, exclusive of England, particularly in the nineteenth century. Lectures, recitations, and assigned reading. Given in 1903-'04; not given in 1904-'05. 2d term, daily, at 8. Professor Abbott.

COURSES PRIMARILY FOR GRADUATES.

XI.—ROMAN INSTITUTIONS OF THE EMPIRE. A study of the constitutional history and institutions of the Roman Empire. May be taken by Juniors and Seniors who have had some previous training in Roman history. Lectures, recitations, and assigned reading. Given in 1903-'04; not given in 1904-'05. See course XII. 2d term. Three hours a week. Monday, Wednesday, and Friday. Hours to be arranged with the instructor. Mr. Becker.

XII.—MEDIÆVAL INSTITUTIONS. A study of the institutions of the mediæval empire. May be taken by Juniors and Seniors who have had some previous training in mediæval history. Lectures, recitations, and assigned reading. Not given in 1903-'04; offered in 1904-'05. See course XI. 2d term. Three hours a week, Monday, Wednesday, and Friday. Hours to be arranged with the instructor. Mr. Becker.

XIII.—ADVANCED ENGLISH CONSTITUTIONAL HISTORY. An advanced course in the constitutional history of England, chiefly from the documents. Courses I and V, or their equivalents, required for admission. 1st term. Hours by appointment. Professor Abbott.

XIV.—HISTORICAL METHOD. *Investigation and presentation.* A course in the principles of historical investigation and composition. Designed primarily for advanced students specializing in history and looking toward preparation for a thesis. Study and practice in investigation and writing, lectures, reports, assigned reading and comparative study of historical compositions, theses, monographs, and histories. 2d term, (a), Tuesday and Thursday, at 10. Professor Abbott and Mr. Becker.

XV.—HISTORICAL METHOD. *Teacher's Course.* Designed primarily for those expecting to teach history in secondary schools. Lectures and reports on methods, materials and preparation for teaching. Assigned reading and conferences. 2d term, (b), Tuesday and Thursday, at 10. These courses (XIV and XV) may be taken separately if desired. Professor Abbott and Mr. Becker.

XVI.—SEMINARY. Graduate students and such Seniors as have permission will be admitted to the seminary, work in which will vary from year to year. While an endeavor will be made to fit particular conditions of the year and the needs of the students of that year in so far as possible, in general the plan will be to alternate from year to year between mediæval and modern European history, and within those fields to take up the study of the history of different countries and periods, as may seem advisable. Students who are planning to do advanced work are therefore requested to consult the instructor at as early a date as possible. For the year 1904-'05 the subject of the seminary will be "English Administration of Colonies and Dependencies." 2d term. Hours by appointment. Professor Abbott.

THESIS. Candidates for the degree of master of arts in this department are subject to the usual requirement of a thesis written under the direction of the department. This must be accompanied by reports and conferences, and should be preceded or accompanied by course XIV. Hours for conference to be arranged with instructor. 2d term. Professor Abbott.

HISTORY CONFERENCE. The department of European history, with the cooperation of other departments in the College, carries on a conference of those interested in history and allied subjects, open to all members of the University. The meetings occur, ordinarily, once every two weeks between the Christmas and Easter recesses. Among the subjects of papers read before the conference during the

past year are the following: "The Black Death," Mr. A. J. Boynton; "The Superlative in History," Mr. Carl Becker; "Oxford: Its Past and Present," Prof. W. C. Abbott; "Archæology and History: Mycenæ," Prof. A. M. Wilcox.

HYGIENE.

(See Anatomy.)

ITALIAN.

(See Romance Language and Literature.)

LATIN LANGUAGE AND LITERATURE.

Professor WALKER.

Assistant Professor OLIVER.

Mr. HENDRIX.

EQUIPMENT.

The department has about 1400 bound volumes, besides a considerable number of dissertations and other pamphlets; and its annual library appropriation enables it both to secure most of the important new books relating to its work and to fill up gaps in its present equipment. It has been the aim to secure a few of the most important editions of all authors and the most important works representing all branches of Latin study; but especial pains have been taken to provide an adequate apparatus for seminary work on Cæsar, Horace, Juvenal, and Vergil. There is also a good equipment for such courses as topography, private life, epigraphy, and political institutions. The department receives several classical journals and sets of studies and reports, and has complete sets of a few of the most important of them. In addition to the illustrative material of the classical museum, the department has about 800 photographs, illustrating especially the courses in topography and private life; and these are being added to rapidly.

ADVICE AS TO CHOICE OF COURSES.

PREPARATION FOR TEACHING.—To secure either a recommendation as teacher of Latin or a teacher's diploma in Latin, the student must elect at least five courses beyond II. They should include at least three of III–VI, and either VII or VIII. This represents the minimum amount of work which will enable a teacher to deal intelligently with the preparatory course in Latin. Among the most immediately helpful of the other courses are XIV and XVI. The course in Ancient History, given by the department of European history, is strongly recommended. Those who wish to do the best work in Latin must take Greek as well, and must get a reading knowledge of German.

COURSES FOR UNDERGRADUATES ONLY.

I.—CICERO'S ORATIONS. The four against Catiline, the one for the Manilian Law, and the one for the Poet Archias. Lessons 23-44 of Bennett's Latin Prose Composition. This course is open to all students of the College who enter with Cæsar and Vergil and to those who, entering with only Cæsar, are conditioned in Cicero. Students who make up an entrance condition in Cicero under any private tutor will be examined by the department in both translation and composition. 1st term, daily, at 1:30. Mr. Hendrix.

II.—VERGIL'S *ÆNEID* (six books). With careful practice in metrical reading and study of mythology. The chief stress will be laid on the literary side of the work. Open only to those who enter with three years of Latin and without Vergil. 1st term, daily, at 8, and 2d term, daily, at 11:15. Mr. Hendrix and Miss Oliver.

III.—CICERO (*De Senectute*) AND LIVY (one book). With prose composition and a thorough review of the grammar. Open to all students who have had Vergil and Cicero. 1st term, daily, at 9 and 11:15, and second term, daily, at 8. Miss Oliver and Mr. Hendrix.

IV.—HORACE (*Odes*) AND TERENCE (one play). With careful practice in metrical reading. The chief stress will be laid on the literary side of the work. Open to all students who have had course III. 2d term, daily, at 9. Miss Oliver.

V.—CICERO'S LETTERS. Mackail's Latin Literature, through the Augustan period. In reading the Letters, the chief stress will be laid on the historical points involved, so that the student gets a good knowledge of the period in which Cæsar and Cicero lived, and which leads up to the conditions under which Vergil wrote. The course is therefore especially helpful to teachers. Open to all students who have had course III. 1st term, daily, at 10:15. Professor Walker.

VI.—HORACE (*Satires and Epistles*) AND PLAUTUS (two plays). Johnston's Private Life of the Romans. Open to Juniors and Seniors who have had course III, and either IV, or V. 2d term, daily, at 10:15. Professor Walker.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

VIIa.—PROSE COMPOSITION AND GRAMMAR (three-fifths). The purposes of the course are: First, to give greater accuracy in reading, by means of a thorough study of the Latin sentence and paragraph; and, second, to prepare teachers to do good work in this essential part of the preparatory course. Open to Juniors and Seniors who have had three of courses III-VI. 1st term, Mondays, Wednesdays, and Fridays, at 2:30. Professor Walker.

VIIb.—RAPID READING (two-fifths). A large amount of easy

Latin will be read, with little syntactical or explanatory comment. The purposes of the course are: First, ease and confidence in translating; and second, a partial acquaintance with some of the less commonly read authors. Open to Juniors and Seniors who have had three of courses III-VI. 1st term, Tuesdays and Thursdays, at 2:30. Miss Oliver.

VIII.—TEACHERS' COURSE IN THE PREPARATORY AUTHORS. A brief study of the historical and literary value of the works of Cæsar, Cicero, and Vergil. The contents of the portions most read in preparatory schools are gone over in rapid summary. Small portions are studied minutely for the purpose of showing what has been done by the great editors toward fixing and elucidating the text. Open to Juniors and Seniors who have had three of courses III-VI. Not given in 1904-'05.

IX.—LUCRETII, AND VERGIL'S ECLOGUES AND GEORGICS. Open to Juniors and Seniors who have had three of courses III-VI. 1st term, daily, at 10:15. Miss Oliver.

X.—TACITUS (Annals) and PLINY'S LETTERS. Open to Juniors and Seniors who have had three of courses III-VI. Not given in 1904-'05.

XIa.—JUVENAL AND PERSIUS (three-fifths). Open to Juniors and Seniors who have had three of courses III-VI. 2d term, Mondays, Wednesdays, and Fridays, at 2:30. Professor Walker.

XIb.—MARTIAL (two-fifths). Especial attention is given in this course to the light thrown by the author on Roman private life. Open to Juniors and Seniors who have had three of courses III-VI. 2d term, Tuesdays and Thursdays, at 2:30. Miss Oliver.

XII.—LITERATURE OF THE EMPIRE. A study of the history of literature under the Empire, supplemented by the reading of large portions of the more important works. Open to Juniors and Seniors who have had three of courses III-VI. Not given in 1904-'05.

XIII.—THE TOPOGRAPHY OF ROME. Lectures and reading. Illustration by the use of photographs and stereopticon. Each member of the class will present two written reports on subjects investigated by himself. Open to all Juniors, Seniors, and Graduates who have had the full amount of preparatory Latin, whether or not they have specialized in this department. 2d term, daily, at 11:15. Miss Oliver.

XIV.—ROMAN POLITICAL INSTITUTIONS. A study of the development and form of the Roman governmental system, through the Republic and early Empire. The course will be conducted by lectures, and by individual investigations by members of the course. Open to all Juniors, Seniors and Graduates who have had the full amount

of preparatory Latin, whether or not they have specialized in this department. The course will be given in 1904-'05 if XX is not given. 2d term, daily, at 1:30. Mr. Hendrix.

XV.—LATIN EPIGRAPHY. This course will have as its object an acquaintance with the forms and the subject-matter of Latin inscriptions. Members will be assigned investigations of the contributions of epigraphy to political, constitutional, and economic history, and to other fields. Open to Seniors and Graduates who have specialized in Latin. Not given in 1904-'05.

XVI.—CÆSAR'S GALLIC CAMPAIGNS. A critical study of the Gallic war, with especial reference to military, historical, and geographical questions. The course is intended both as an introduction to the methods of the graduate seminary and as a practical course for teachers. Open only to Graduates and a few properly prepared Seniors. 1st term, daily, at 9. Professor Walker.

COURSES FOR GRADUATES ONLY.

XVII.—SEMINARY. Some author or department of Latin literature is chosen each year for critical study. The work consists largely of papers by members of the Seminary, the aim being to train students for original investigation. XVI will be given in its place in 1904-'05.

XVIII.—SEMINARY continued. A subject for the thesis required of all candidates for the degree of Master of Arts is expected to present itself in the course of the Seminary work, and in the second term a part of the time is devoted to the working up of that subject. Given in 1904-'05 as a continuation of XVI. 2d term, daily, at 9. Professor Walker.

XIX.—SANSKRIT. An elementary course, employing Perry's Primer and Whitney's Grammar, with especial attention to the relation of Sanskrit to the other Indo-European languages. Open to those who have specialized in either Latin, Greek, or German. 1st term, daily, at 2:30. Mr. Hendrix.

XX.—SANSKRIT continued. Lanman's Reader. The course will be given in 1904-'05 if XIV is not given. 2d term, daily, at 1:30. Mr. Hendrix.

MATHEMATICS AND ASTRONOMY.

Professor MILLER.

Associate Professor NEWSON.

Assistant Professor VAN DER VRIES.

Assistant Professor ASHTON.

Mr. KEPLINGER, Fellow.

EQUIPMENT.

The following list represents the equipment for instruction in mathematics and astronomy:

(a).—MATHEMATICS. Eighty-eight models in wood, manufactured by Schröder, Germany. Fifty-three models of algebraic surfaces, embracing cubics, solids and surfaces of revolution, ellipsoids, paraboloids, and hyperboloids, and intersections of the same, made of plaster of Paris, and weighted strings, also from Germany.

(b).—ASTRONOMY. A six-inch telescope, manufactured by A. Clark & Sons, with eye-glasses ranging in power from 30 to 600; a two-inch transit telescope; a sextant; a twenty-inch celestial globe; 400 astronomical slides; a projection lantern; a full set of E. L. Trouvelot's astronomical plates; star charts and maps; Hagan's Atlas Stellarum Variabilium; Huggins's Atlas of Representative Stellar Spectra; and Atlas Photographique de la Lune, by M. M. Lœwy and M. P. Puiseux. In the University library are to be found the publications of the best foreign and American authors upon the subjects of mathematics and astronomy to the number of about 1200 volumes, and nearly all the mathematical and astronomical journals of Europe and America are received regularly.

Mathematics.

ADVICE AS TO CHOICE OF COURSES.

Students in the College who desire to take a full course in mathematics will find the first five courses following suitable as preparation for more advanced work, such as the courses for advanced undergraduates and graduates. Teachers of mathematics in high schools and academies are advised to complete all the courses for undergraduates and course XIII. Students electing astronomy II and III should be well versed in the undergraduate mathematical courses as far as to course VII.

COURSES FOR UNDERGRADUATES ONLY.

I.—SOLID GEOMETRY. The usual theorems and constructions of good text-books and applications to the mensuration of surfaces and volumes. Wentworth's Solid Geometry. 1st term, (a), at 8. Mr.

II.—(a) ALGEBRA. Binomial theorem, logarithms, determinants. Wentworth's College Algebra, revised. (b) PLANE TRIGONOMETRY,

Miller's Trigonometry. Both terms. 1st term, at 8, Mr. Van der Vries; at 9, Mr. Ashton; at 10:15, Professor Newson; at 1:30, Mr. ———. 2d term, at 8, Mr. ———; at 10:15, Mr. Van der Vries. Open to all students of the College.

III.—ANALYTIC GEOMETRY. Elements of plane analytics, including the geometry of the conic sections, and an introduction to solid analytics. Ashton's Analytic Geometry. Open to all students of the College who have had course II. Both terms. 1st term, at 9, Professor Newson; at 10:15, Mr. Van der Vries. 2d term, at 8, Mr. Van der Vries; at 10:15, Mr. Ashton; at 1:30, Mr. Ashton.

IV.—DIFFERENTIAL AND INTEGRAL CALCULUS. First course. Fundamental principles and general methods, with some applications to problems arising in mathematics and mathematical physics. Osborne's Calculus. Open to all students of the College who have had course III. Both terms. 1st term, at 10:15, Mr. Ashton; at 11:15, Professor Miller. 2d term, at 9, Professor Newson; at 11:15, Professor Miller.

V.—INTEGRAL CALCULUS. A continuation of course IV, giving a more complete treatment of the various methods of integration, and the solution of problems in fluid pressure, center of gravity, moments of inertia, etc. Open to all students of the College. 2d term, at 2:30. Mr. Ashton.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

VI.—DIFFERENTIAL EQUATIONS. An introductory course into the methods of solving differential equations. Open to Juniors and Seniors of the College who have had course IV. 1st term, at 9. Professor Miller.

VII.—ADVANCED CALCULUS. The topics studied include infinite series, definite integrals, multiple integrals, elliptic integrals, differential equations, elements of functions of a complex variable. Open to Juniors and Seniors of the College who have had courses IV and V. Not given in 1904-'05.

VIII.—ANALYTIC MECHANICS. The topics studied include geometry of motion, kinematics, statics, dynamics of a particle and of a rigid body. Open to Juniors and Seniors of the College who have had courses IV and V. 2d term, daily, at 11:15. Professor Newson.

IX.—HIGHER ALGEBRA. This course treats of limits, imaginaries, and their applications to circular and hyperbolic trigonometry, determinants, symmetric functions, systems of linear equations, theory of equations, and the numerical solution of algebraic and transcendental equations. Open to Juniors and Seniors who have had course IV. 1st term, at 9. Mr. Van der Vries.

X.—SOLID ANALYTIC GEOMETRY AND DIFFERENTIAL GEOMETRY. Elements of analytic geometry of three dimensions, quadric surfaces, general theory of twisted curves and surfaces, application of the infinitesimal calculus to the theory of surfaces. Open to Juniors and Seniors who have had courses IV and V. Not given in 1904-'05.

XI.—THEORY OF FUNCTIONS. Theories of Cauchy, Weierstrass, and Riemann, including infinite series and integration, conformal representation, algebraic functions and their integrals, etc. Open to Juniors and Seniors who have had courses IV and V. 1st term, daily, at 11:15. Mr. Ashton.

XII.—ADVANCED ANALYTIC GEOMETRY. Homogeneous coordinates of point and line, principle of duality, projective images, poles and polars, methods of reciprocal polars, classification of conics, focal properties, etc. Open to Juniors and Seniors who have had course IV. 2d term, daily, at 9. Mr. Van der Vries.

XIII.—TEACHERS' COURSE. This course is designed for teachers and students who are preparing to become teachers of mathematics. It embraces the history, pedagogy and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. This course consists of (1) history of mathematics, reading, and lectures; (2) a comparative study of the mathematical curricula of the schools of this country and of Europe; (3) discussions on the best methods of teaching the different topics; (4) practice teaching. Open only to a limited number of students. Both terms, by appointment. Professor Newson.

COURSES FOR GRADUATES ONLY.

XIV.—QUATERNIONS. Hardy. By appointment. Professor Miller.

XV.—PROJECTIVE GEOMETRY. The geometry of the projective group in the plane and in space is studied in detail both by the analytic and synthetic methods; applications to non-euclidean geometry. By appointment. Professor Newson.

XVI.—THEORY OF TRANSFORMATION GROUPS. An analytical and synthetic treatment of various transformations of space, emphasizing the notion of a group of transformations. The groups of collineations, conformal transformations, motions and contact transformations are considered. By appointment. Professor Newson.

XVII.—THEORY OF SURFACES AND TWISTED CURVES. Consideration of surfaces of the third and fourth orders, and of certain other general classes of surfaces; also of curves of the third and fourth orders and their properties. By appointment. Mr. Van der Vries.

XVIII.—GALOIS'S THEORY OF EQUATIONS. The application of the methods of groups to the study of algebraic equations. By appointment. Mr. Ashton.

Astronomy.

COURSES FOR UNDERGRADUATES ONLY.

These courses are open to Juniors and Seniors of the College.

I.—DESCRIPTIVE ASTRONOMY. Lectures and recitations, with occasional evenings for observation. Text-book, Comstock's *Astronomy*. 1st term, daily, at 10:15. Professor Miller.

II.—PRACTICAL ASTRONOMY: Theory of least squares. Use of a sextant and transit instrument, determination of time, latitude and longitude, etc. Text-book, Doolittle's *Practical Astronomy*. 2d term, daily, at 10:15. Professor Miller.

COURSE FOR GRADUATES AND ADVANCED UNDERGRADUATES.

III.—CELESTIAL MECHANICS. Text-book, Moulton's *Celestial Mechanics*. By appointment. Professor Miller.

MINERALOGY AND PETROGRAPHY.

EQUIPMENT.

This department has a good set of wooden models for beginners in crystallography and glass models for advanced work in the same and in optical mineralogy. It also has a supply of modern petrographic microscopes, a machine for grinding rock sections, a good laboratory for work in mineralogy and blowpipe analysis, and good museums and library, elsewhere described in this catalogue.

ADVICE AS TO CHOICE OF COURSES.

Course I should be taken first by all students of mineralogy and petrography. Should the student wish to specialize in the subject he may then choose a purely mineralogical course, or a course including petrography. If the latter, the subjects should be taken as given; if the former, then the petrography may be omitted.

Courses I, II and III are open to Juniors and Seniors of the College. Courses V and VI are open to graduate students only.

COURSES FOR UNDERGRADUATES ONLY.

I.—ELEMENTARY MINERALOGY. A brief course in crystallography, blowpipe analysis, and the metalliferous and silicate minerals. In crystallography, considerable work is required in drawing crystal forms and measuring angles of crystal models and natural crystals. In blowpipe analysis, sufficient practice is required to familiarize the student with necessary blowpipe tests for mineral identification; but the general physical properties, as crystalline form, cleavage, gravity,

hardness, and color, are emphasized as most important means of identification. Lectures and laboratory work. 2d term, daily, 3:30 to 5:30. Professor Haworth.

II.—SYSTEMATIC MINERALOGY. This course is a continuation of I, including an extended study of crystallography and crystal measurements with reflecting goniometer and crystal projection, a careful study of the most approved classification of minerals, and an introduction to the optical properties of minerals. Open to Juniors and Seniors who have had course I, chemistry I, III, and V, and physics I. 1st term, daily, by appointment. Professor Haworth.

III.—ELEMENTARY PETROGRAPHY. This course begins with a brief review of the common rock-forming minerals with special reference to their physical properties, particularly their optical properties. This is followed by a study of the best methods of identification of minerals in massive rocks, and concludes with naming and classification of the common massive rocks, their nature, origin, and distribution. Open to Juniors and Seniors who have had course I, chemistry I, III, and V, and physics I. 2d term, (α), lectures daily, with five hours' additional laboratory work a week, by appointment. Professor Haworth and assistant.

COURSES FOR GRADUATES ONLY.

IV.—ADVANCED MINERALOGY. An advanced course in mineralogy may be chosen by graduate students who have taken courses I and II, or their equivalent, and who wish to devote one term or more to the subject. It may be elected as a major or minor for the degree of master of arts or doctor of philosophy. By appointment. Professor Haworth.

V.—ADVANCED PETROGRAPHY. Graduate students who have completed courses I, II and III may elect this course for a major or minor subject for the degree of master of arts or doctor of philosophy. It may be pursued for a term or more. By appointment. Professor Haworth.

Students electing either of the above courses in mineralogy or petrography as a major for the degree of doctor of philosophy must devote at least half their time to it for three years, and must present a dissertation embodying the results of original work done in connection therewith, in accordance with the general conditions governing the granting of this degree by this University and with the requirements of the department of mineralogy and petrography.

ORGANIC EVOLUTION.

Professor SNOW.

COURSE FOR ADVANCED UNDERGRADUATES AND GRADUATES.

I.—THE PRINCIPLES OF EVOLUTION. Lectures and readings.
1st term, daily, at 10:15. Professor SNOW.

This course includes a discussion of the primal law of creation by slow process, as unfolded by the relation of the living forms of the past, the geographical distribution of plants and animals of the present, and the facts of embryological development; the fertilization of plants by insects; the theories of natural selection and inheritance of congenital and acquired characters; and the relation of the law of evolution to other great laws of the natural and spiritual world.

PHARMACY.

Professor SAYRE.

Mr. EMERSON.

EQUIPMENT.

(See equipment, under School of Pharmacy.)

COURSES FOR ADVANCED UNDERGRADUATES.

I.—PHYSIOLOGICAL AND MEDICAL CHEMISTRY. This course is offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. 1st term, four days a week, 3:30 to 5:30. Professor Sayre and Mr. Emerson. (Course I is course VIII under Chemistry in the School of Pharmacy.)

II.—ADVANCED WORK IN PHYSIOLOGICAL CHEMISTRY. Analysis of dietetics used in medicine, quantitative valuation of proximate constituents of foods, assay of digestive ferments, and the separation of organic principles of animal tissues, etc. Professor Sayre and Mr. Emerson. (Course II is course IX under Chemistry in the School of Pharmacy.)

PHILOSOPHY.

Professor TEMPLIN.

Associate Professor HOXIE.

Assistant Professor HOGG.

EQUIPMENT.

The Philosophical Library contains about 1400 volumes, including complete sets of the leading philosophical and psychological periodicals published in the English, German, and French languages.

These are all available for students working in the department, and are kept in a special departmental reading-room of the general library.

The work in experimental psychology is carried on in a laboratory of three rooms and a dark room. These are equipped with gas, water, and electric currents, direct and alternating, and a considerable supply of apparatus of various kinds, such as is used in modern psychological laboratories. A shop arranged for work in wood, metal and glass enables the instructor and student to improvise many pieces of apparatus not already provided.

ADVICE AS TO CHOICE OF COURSES.

All succeeding courses should be preceded by course I. Courses II to VIII, inclusive, are open to Juniors and Seniors of the College. Courses II to X, inclusive, are open to graduates.

COURSES FOR UNDERGRADUATES ONLY.

I.—ELEMENTARY PSYCHOLOGY. A part of the term, approximately one-third, is devoted to an exposition of the mental processes of deductive logic. Hyslop's *Logic and Argument* is used as a basis for this work. The remainder of the course is devoted to the study of the mental processes in general, and James's *Psychology*, Briefer Course, serves as a text. Open to all students of the College. 1st and 2d terms, daily, at 8. Mr. Hogg.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

II.—EXPERIMENTAL PSYCHOLOGY. A laboratory course, following the texts of Sanford and Titchener, together with original investigations and readings from standard works and current psychological literature. 1st term, daily, at 3:30. Mr. Hogg.

III.—EXPERIMENTAL PSYCHOLOGY. A continuation of course II. 2d term, daily, at 3:30. Mr. Hogg.

IV.—HISTORY OF PHILOSOPHY. A general course in Greek, mediæval and modern systems of philosophy. Rogers's *Students' History of Philosophy* is used as a text, in connection with frequent readings from the works of the great philosophers. 2d term, daily, at 2:30. Professor Templin.

V.—ETHICS. A psychological analysis of human conduct, a study of the content and philosophical meaning of goodness, the problem of evil, and some practical applications of ethical theory. Paulsen's *System of Ethics*, with assigned readings. 1st term, daily, at 2:30. Professor Templin.

VI.—ESTHETICS. A historical and constructive treatment of the problem of the beautiful, followed by an application of esthetic theory to nature and the fine arts. Lectures, discussions, and assigned readings. 1st term, daily, at 1:30. Professor Templin.

VII.—ADVANCED LOGIC. Deductive and inductive. This course follows closely the treatment in Welton's Manual of Logic, which is used as a text. Outside reading in Mill, Bradley, Bosanquet, Sigwart, and Wundt. 2d term, daily, at 9. Mr. Hogg.

VIII.—COSMOLOGY. A critical examination of dualism, materialism, idealism, theism, panpsychism, pantheism and evolution as world theories. Paulsen's Introduction to Philosophy will be used as a basis for this course. 2d term (*a*), daily, at 1:30. Professor Templin.

IX.—METAPHYSICS. A study of some of the great historical attempts at a conception of the nature of reality. Lectures, discussions, and the reading of selections from the works of Plato, Aristotle, Spinoza, Kant, Schopenhauer, and Spencer. 2d term (*b*), daily, at 1:30. Professor Templin.

X.—THE BRAIN AS THE ORGAN OF MIND. A study of the human nervous system, designed to serve as an introduction to advanced work in psychology. The anatomical foundation for the phenomena of sensation as involved in the study of the special senses, the end organs, the sensory and motor tracts, cerebral localization, etc.—all from the psychological rather than the anatomical standpoint—will be the object of the course. Students taking this course will take courses I and V with the students of medicine, after which they will do special reading and laboratory work under the direct supervision of the instructor. Throughout the year, by appointment. Professor Hoxie.

COURSES FOR GRADUATES ONLY.

IV.—ADVANCED PSYCHOLOGY. A laboratory course consisting of special work in psychological research, conducted by the student under the direction of the instructor. It must be preceded by course II, and may be pursued during either or both terms. By appointment. Professor Templin.

X.—MODERN PHILOSOPHY. An advanced course in German or English philosophy adapted to the special need of applicants. It includes a critical study of the chief works of the philosophers, preparation of theses, and conferences with the instructor. It must be preceded by courses III, IV, VII, and VIII. By appointment. Professor Templin.

PHYSICAL EDUCATION.

Associate Professor NAISMITH.

Miss FISH.

Mr. PLANE.

EQUIPMENT.

The gymnasium is located in the basement of Snow Hall, and, while inadequate to the needs of the University, affords opportunity for regular exercise. The main floor is eighty-six feet long by thirty-six wide. The equipment consists of light and heavy apparatus, such as clubs, wands, dumb-bells, foils, horses, parallel bars, vaulting and horizontal bars, rowing machines, and pulley weights. A room is set apart for special development, and there are facilities for most of the indoor games. Baths and lockers are provided in separate rooms.

ADVICE AS TO CHOICE OF COURSES.

Courses VII, IX, X and XII are designed for those who intend to teach this subject.

Course XI is designed for teachers; to give them such a knowledge of the growth and development of the child that they will be able to care for the health of the pupil and to arrange his studies to suit his development.

Course VIII is arranged with reference to the course in domestic science.

COURSES FOR UNDERGRADUATES ONLY.

I.—HYGIENE. Lectures designed to help the students to maintain health, dealing with food, clothing, exercise, conditions conducive to study, prophylactic treatment, especially in regard to infectious and contagious diseases. Required of Freshmen. 1st term, Friday, at 4:30.

II.—EMERGENCIES. Lectures and demonstrations to teach the student to care for the injured in the absence of the physician, dealing with bruises, wounds, fractures, poisons, and the various conditions that produce unconsciousness and convulsions. By appointment. Not for credit.

III.—MARCHING. Elementary work in free-hand, dumb-bells, wands, and clubs; hygienic work on the apparatus; sprinting, jumping; gymnastic games for recreation. 1st term.

IV.—ADVANCED WORK IN FREE-HAND. Calisthenics; and hygienic work on the apparatus; athletics of an all-round nature; games for skill and physical judgment. 2d term.

V.—EDUCATIONAL WORK WITH LIGHT AND HEAVY APPARATUS. Fencing and broadsword; games requiring skill and self-control; squad-leading in calisthenics and apparatus work. 1st term.

VI.—SPECIALIZING IN SOME LINE OF EXERCISE. Boxing and wrestling; conducting games, competitions, and exhibitions. 2d term.

VII.—LEADER'S CLASS. Analysis of gymnastic movements; invention of drills and combination of exercises; conducting classes; the use of safety methods and apparatus. By appointment.

VIII.—Those physically qualified may elect the following in their season and to the following amounts: Football, three-fifths term; baseball, two-fifths term; tennis, two-fifths term; basketball, three-fifths term; track and field athletics, two-fifths term; hockey, one-fifth term; lacrosse, two-fifths term. This work must be done under the appointed coach or leader, in order to obtain credit.

Additional courses will be arranged for special work, and prescribed work which cannot be done in class.

Every student may receive a thorough medical and physical examination, with the results platted on a chart, where needed special exercise will be prescribed.

Every student using the gymnasium or who is a candidate for any University team must pass a satisfactory medical and physical examination.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

IX.—MECHANICAL ANATOMY. The study of the bones, articulations and muscles in their relations as mechanical principles. The location of the viscera. The distribution of the principal nerves and blood vessels, and the topography of the muscles. 1st term, daily, at 9.

X.—PHYSICAL EDUCATION. Dealing with the effects of exercise on the various systems of the body; history of the subject; physical examinations; prescription of exercise; mechanical therapeutics; physical diagnosis and anthropometry. 2d term, daily, at 9.

XI.—DEVELOPMENT OF SCHOOL CHILDREN. Study of the normal development at different ages; tendencies to abnormalities; the signs of incipient illness; the signs of fatigue and strain; the development of the nerve centers; the relation of physical development to mentality, and the effect of physical condition to the moral nature. 2d term, daily, at 1.

XII.—THE PRINCIPLES OF ATHLETIC SPORTS AND GAMES. Dealing with the mechanical principles involved in the event; the analysis of the exercise; methods of teaching; the relation of the different sports and games; the quality of physique and mind that is required in and developed by the different games. By appointment.

XIII.—PHYSICAL EDUCATION OF CHILDREN. Theory and prac-

tice. To include, among other things, physiology of childhood; growth of the child; influence of diet, clothing, and sleep; effects of physical and mental activity; consequences of physical and mental strain; development of the nerve centers; relation of the physical condition to the kind and amount of mental and emotional strain.

PHYSICS.

Professor BLAKE.

Assistant Professor RICE.

Mr. STIMPSON.

EQUIPMENT.

For lecture purposes there is a large lecture-room supplied with water, gas, and both direct and alternating currents. The apparatus available is sufficient to illustrate all the ordinary experiments usually given in a year's course in college physics and to show some of the more advanced experiments.

There are three large general laboratory rooms and seven smaller rooms for special work, each supplied with water, gas and several electrical power circuits. The apparatus for general physics is sufficient to enable each student to perform all the experiments usually described in manuals of college physics. For advanced work the equipment includes a number of pieces of fine apparatus in heat, light, and electricity; and there is regularly employed a mechanician who is constantly making auxiliary apparatus and occasionally more complicated special pieces. The entire equipment is being increased as rapidly as possible.

The departmental library contains the more important English, French, and German periodicals, with bound volumes for twenty or thirty years. These include the *Philosophical Transactions* of the Royal Society, the *Philosophical Magazine*, the *Journal de Physique*, Drude's *Annalen* and *Beiblätter*, and others. There is also included a good number of the standard treatises and of more elementary works for the general student.

ADVICE AS TO CHOICE OF COURSES.

Courses III to X are open to Juniors and Seniors of the College who have had the necessary preparation. Courses I and II are open to all students of the College. Courses VI to X are open to graduate students.

Courses VII, VIII, IX, X may be extended beyond one term with approval of the instructor.

COURSES FOR UNDERGRADUATES ONLY.

I.—INTRODUCTORY PHYSICS. Recitations and laboratory. Open to all students of the College who do not offer physics for entrance,

and who have had algebra and plane geometry. 2d term, daily, 10:15 to 12:15. Mr. Rice.

II.—GENERAL PHYSICS. Experimental lectures and recitations. Open to all students of the College who have had physics I, or equivalent, and plane trigonometry. 1st term, daily, at 9. Mr. Rice.

III.—PHYSICAL MEASUREMENTS AND METHODS. A laboratory course, to follow physics II. Open to Juniors and Seniors who have had physics II, or equivalent, and plane trigonometry. 2d term, daily, 1:30 to 3:30. Mr. Rice.

IV.—MECHANICS, SOUND, AND HEAT.—A fundamental course of experimental lectures and recitations. Open to Juniors and Seniors who have had plane trigonometry and analytical geometry, and French I, II, III. 1st term, four days a week, at 11:15. Laboratory two hours a week. Professor Blake and Mr. Stimpson.

V.—ELECTRICITY, MAGNETISM, AND LIGHT.—Continuation of physics IV. Open to Juniors and Seniors who have had plane trigonometry, analytics, and calculus. 2d term, four days a week, at 11:15. Laboratory two hours a week. Professor Blake and Mr. Stimpson.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

VI.—AN INTRODUCTION TO MATHEMATICAL PHYSICS. A theoretical course in general principles. Open to Juniors and Seniors and Graduates who have had physics IV and V, or physics II and III. A ready, working knowledge of calculus is necessary. 2d term, by appointment. Professor Blake or Mr. Rice.

VII, VIII, IX and X consist of more specialized study of the subjects of VI, embracing both mathematical and experimental presentations. Open to Juniors, Seniors and Graduates who have had calculus, physics II and III or IV and V.

VII.—KINEMATICS AND DYNAMICS. Properties of matter. Either term, by appointment. Professor Blake or Mr. Rice.

VIII.—ACOUSTICS AND THERMICS. Either term, by appointment. Professor Blake or Mr. Rice.

IX.—OPTICS. Either term, by appointment. Professor Blake or Mr. Rice.

X.—ELECTRICS.—Either term, by appointment. Professor Blake or Mr. Rice.

PHYSIOLOGY.

Associate Professor HYDE.

Demonstrator, ———

EQUIPMENT.

The physiological department is thoroughly equipped with approved, modern apparatus for demonstration and experimental work. Besides a large lecture-room that seats 100 students, it possesses a department library for the use of the students which contains the latest reference books and all of the best physiological journals. There is a large laboratory for the students of the College that contains tables particularly designed for their work. In this laboratory are, besides the needed instruments, digesters, spirometers, Kymographs, manometers, and all kinds of electrical apparatus, a skeleton, and a finest French manikin.

The research-room is fitted up with necessary tables, instruments and electrical apparatus for any kind of physiological experiments. There is also a large preparation room, where most of the material is prepared, and a storeroom.

ADVICE AS TO CHOICE OF COURSES.

Course I is recommended especially to general students and to those who intend to specialize in domestic science.

Course II is designed for students who are preparing to teach.

I.—PHYSIOLOGY. The structure and functions of the human body. The course is designed for students in domestic science. To be combined with course X in hygiene. (See anatomy.) Seven weeks in Sophomore year. Laboratory work, demonstrations, lectures and recitations. 2d term, (a), daily, at 11:15. Professor Hyde.

COURSES FOR ADVANCED UNDERGRADUATES.

II.—PHYSIOLOGY. Open to Juniors and Seniors in the College. Lectures, recitations, demonstrations, and laboratory work, based on Martin's Human Body, Advanced Course. 2d term, Monday, Thursday, Friday, at 11:15, Tuesday and Wednesday, 10:15-12:15. Professor Hyde.

III.—PHYSIOLOGY. Investigation of special subjects. Open to Juniors and Seniors who have completed physiology I. Either or both terms, by appointment. Professor Hyde.

COURSE FOR GRADUATES ONLY.

IV.—PHYSIOLOGY. Experimental physiology and original research. Open to Juniors and Seniors who have taken not less than a year of anatomy and physiology, and have given evidence that they are prepared for it. Either or both terms, by appointment. Professor Hyde.

PSYCHOLOGY.

(See Philosophy.)

PUBLIC SPEAKING AND DEBATE.

Assistant Professor FRAZIER.

EQUIPMENT.

Students in this department will find in the library the collected orations of the leading American orators from the early colonial period to the present time; all of the better known English orators, and specimens of the oratory of Greece, Rome, and modern France and Germany. In addition, there is a fairly complete list of the early and the more recent writers who deal with the theory of the subject. The students in debate have access to the economic, history and sociology seminary rooms in Spooner Library.

ADVICE AS TO CHOICE OF COURSES.

Work in this department is arranged to meet the needs of two classes of students: (1) Those who wish merely a preliminary training in public speaking and reading; and (2) those who wish to specialize to some extent in this subject. Students of class one should elect course I during the Freshman or Sophomore years, and, if possible, either course VI or VII during the Junior or Senior years. Students of class two should elect their courses in catalogue order, and consult with the instructor as to collateral courses to be pursued. All students contemplating taking work in this department are urged to join one of the literary societies of the University as supplementary to the class-room work.

COURSES FOR UNDERGRADUATES.

I.—PRINCIPLES OF SPOKEN DISCOURSE. Open to all students of the College. A course designed to be introductory and general rather than technical. Training in the principles of good reading, in the analysis and delivery of famous speeches, and in the construction and oral presentation of original speeches. Drill in speaking from outline and in the use of the manuscript. Lectures, and required library reading. 1st or 2d term, daily, at 1:30. Mr. Frazier.

II.—ORAL DEBATES. The object of this course is to give the student preliminary training in debate. The fundamental principles of debating will be discussed in detail; lectures will be given on the collecting and arranging of material. There will be weekly debates by the members of the class. Open to Juniors and Seniors of the College who have had public speaking I and rhetoric IV. 1st term, Monday, Wednesday, and Friday, at 3:30. Mr. Frazier.

III.—ORAL DEBATES. Advanced course. A thorough investiga-

tion of a limited number of subjects taken from the field of political economy, sociology, and history. Conferences, class-room discussion and criticism. Open to Juniors and Seniors of the College who have had public speaking I and II. 1st and 2d terms, Tuesday and Thursday, at 3:30. Mr. Frazier.

IV.—EXPOSITORY ADDRESSES. A study of the form and requirements of the expository address. The subject-matter for the speeches in this course will be chosen exclusively from economic subjects. Open to Juniors and Seniors of the College who have had public speaking I and economics I. 2d term, at 2:30, Monday, Wednesday, and Friday. Mr. Frazier.

V.—READING ALOUD. The aim of this course is to give the student suggestions and helps which will enable him to read aloud intelligently, simply, and with appreciation. There will be lectures and class-room drill. Open to Juniors and Seniors of the College. 1st term, at 2:30, Tuesday and Thursday. Mr. Frazier.

VI.—FORMS OF PUBLIC ADDRESS. The study and practice of the forms of demonstrative oratory—the eulogy, the after-dinner speech, political oratory, anniversary and commemorative addresses, nominating speeches, responses and platform addresses. Library work covering the literature of the subject. Open to Juniors and Seniors. First term, Monday, Wednesday, and Friday, at 2:30. Mr. Frazier.

VII.—EXTEMPORE SPEAKING. The object of this course is to train the student to speak on his feet. Special attention will be given, in the first place, to the construction of the speech, to the gathering and outlining of the material; and, in the second place, to the natural and effective delivery of the material thus arranged. Open to Juniors and Seniors. 2d term, Tuesday and Thursday, at 2:30. Mr. Frazier.

RHETORIC.

(See English Language and Rhetoric.)

ROMANCE LANGUAGES AND LITERATURES.

Professor GALLOO.
 Assistant Professor LINCOLN.
 Assistant Professor BASSETT.
 Assistant Professor LE DUC.*
 Miss NEUENSCHWANDER.
 Mr. WINTON, Fellow.

EQUIPMENT.

The department of romance languages and literatures possesses a collection of illustrative material, consisting of several hundred photographs, stereopticon slides, maps, plans, plaster casts, etc., representing historical features of French life, in costume, architecture, etc., as well as persons, places and things that have a closer and more definite relation to literature or to special literary works. The library of this department contains 2465 volumes, and receives ten French and two Spanish periodicals.

ADVICE AS TO CHOICE OF COURSES.

The first five courses must be taken in the order given below. Upon completion of these, students whose aim is to gain accuracy and ease in writing and speaking French and a thorough knowledge of the grammar, are advised to select courses VI and VII. Advanced students should also take German as a collateral study.

Students of French literature should take courses X to XV, inclusive. Course XIV should come first. Students in the literature courses are recommended to take mediæval and modern European history.

Those especially interested in the linguistic study of French should take courses XVI to XVIII, inclusive, which with courses XIX and XX, are open only to advanced students. Students in linguistics should have a good reading knowledge of Latin as a basis.

A reading knowledge of Spanish and Italian should precede graduate study in this department.

The head of the department will, on application, outline a course for students intending to specialize in or teach French.

COURSES FOR UNDERGRADUATES ONLY.

I.—ELEMENTARY COURSE. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation and in forms. 1st term. Daily, at 8, 9, 10:15, 11:15, or 1:30. Professor Galloo, Mr. Lincoln, Miss Neuenschwander, or Mr. Bassett. Open to all students who have had three years of Latin or three years of German.

* Absent on leave 1903-'04.

II.—ELEMENTARY COURSE. A continuation of course I. Reading of simple prose texts, with exercises in dictation and elementary composition. 2d term. Daily, at 8, 9, 10:15, 11:15, or 2:30. Professor Galloo, Mr. Lincoln, Miss Neuenschwander, or Mr. Bassett.

III.—MODERN FRENCH PROSE. Translation and reading of some works of Mérimée, Gautier, George Sand, Anatole France, and Hugo. Dictation and practice in composition and conversation. 1st term. Two divisions. Daily, at 9 and 10:15. Mr. Lincoln or Miss Neuenschwander.

IV.—FRENCH PROSE AND POETRY. Reading or representative works of the seventeenth, eighteenth and nineteenth centuries. Continued practice in writing and speaking French. 2d term. Two divisions. Daily, at 9 and 10:15. Mr. Lincoln or Miss Neuenschwander.

V.—(a) MOLIERE. Careful study of the more important plays, rapid reading of the others; reports in French by members of the class. (b) FRENCH COMPOSITION AND CONVERSATION. 1st term, daily, at 11:15. Professor Galloo.

VI.—ADVANCED COMPOSITION. Daily exercises in writing and speaking French. Must be preceded by course V (b), or its equivalent. 2d term, daily, at 11:15. Professor Galloo.

VII.—TEACHERS' COURSE. Systematic review of the grammar from the point of view of the requirements of elementary instruction. Outlines of historical grammar. Study of methods of teaching languages and practice in teaching. Must be preceded by course V. 2d term, daily, at 10:15. Professor Galloo.

VIII.—HISTORY OF THE DRAMA. Lecture and reading course. Given in conjunction with departments of Greek, Latin, German, and English. 2d term, daily, at 2:30. Mr. Lincoln.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

X.—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. A study of the development of French literature from the Renaissance to the end of the reign of Louis XIV. 1st term, daily, by appointment. Professor Galloo.

XI.—FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Especial attention is paid the life and works of Voltaire; study of Montesquieu, Rousseau, and the encyclopedists; the dramatists. 1st term, daily, by appointment. Professor Galloo.

XII.—THE ROMANTIC SCHOOL (1800-'35). A study of the rise of romanticism in France and of its characteristic products in poetry and the drama. (Given in 1903-'04.) 1st term, daily, at 9. Professor Galloo.

XIII.—DEVELOPMENT OF THE FRENCH NOVEL. A survey of the novel in the seventeenth and eighteenth centuries; its development in the nineteenth century, with special reference to the origin and growth of realism and naturalism. Alternates with course XIV. (Given in 1903-'04.) Second term, daily, at 9. Professor Galloo.

XIV.—HISTORY OF FRENCH LITERATURE. Lectures, recitations, and private readings. Alternates with course XIII. (To be given in 1904-'05.) 2d term, daily, at 9. Professor Galloo.

XV.—THE FRENCH DRAMA. A study of the development of the theater in France from the origin to the period of Augier and Dumas fils. Lectures, recitations, and written reports. 2d term, daily, at 2:30. Mr. Lincoln.

XVI.—HISTORY OF THE FRENCH LANGUAGE. Its rise from low Latin; the additions from other sources; its growth and modifications. 1st term, daily, at 9. Professor Galloo. (To be given in 1904-'05.)

XVII.—OLD FRENCH. An introduction to French philology. Reading of the *Extraits de la Chanson de Roland* (Gaston Paris), and of some of the oldest texts, with special attention to the phonetic changes and the inflections. 2d term, by appointment. Professor Galloo.

COURSES FOR GRADUATES ONLY.

XVIII.—OLD FRENCH. A continuation of course XVII. Phonology and morphology of old French, with some discussion of syntax. *Le Pèlerinage de Charlemagne à Jerusalem*; *Aucassin et Nicolette*. 2d term, by appointment. Professor Galloo.

XIX.—MEDIÆVAL FRENCH LITERATURE. From the first literary monuments to the Renaissance. 2d term, by appointment. Professor Galloo.

XX.—MOLIERE. Same course as V (*a*), with additional requirements. Study of Molière; his life and surroundings; his plays—their sources and influence. One or more essays will be written, preferably in French. 1st term, by appointment. Professor Galloo.

SPANISH.

COURSES FOR UNDERGRADUATES ONLY.

Students are advised to take as preparation courses I and II in French.

I.—ELEMENTARY COURSE. An outline of grammar (Ramsey). *Doce Cuentos escogidos*. Matzke's Reader. Elementary composition. 1st term, daily, at 9. Mr. Bassett.

II.—CONTINUATION OF COURSE I. Matzke's Reader, continued. Easy writing. Rapid reading, mainly in modern authors: P. A. de Alarcón, Pérez Galdós, Palacio Valdés, Valera. 2d term, daily, at 9. Mr. Bassett.

III.—CERVANTES. Grammar and composition. Reading in Don Quixote, with a brief study of the other works of Cervantes. 1st term, daily, at 2:30. Mr. Bassett.

IV.—THE SPANISH CLASSICAL DRAMA. Especial attention will be devoted to Lope de Vega and Calderón. Selected plays by Guillen de Castro, Tirso de Molina, Juan Ruiz de Alarcón and Moreto will be read. The influence of this drama on other literatures will be considered. 2d term, daily, at 2:30. Mr. Bassett.

ITALIAN.

COURSES FOR ADVANCED UNDERGRADUATES ONLY.

I.—ELEMENTARY ITALIAN. Grammar. Easy composition exercises. Reading, Cuore, by Edmondo de Amicis. 2d term, daily, at 1:30. Mr. Bassett.

II.—GRAMMAR, COMPOSITION, AND READING. Ariosto, Torquato Tasso, Machiavelli, etc. 1st term, daily, at 1:30. Mr. Bassett.

SANSKRIT.

(See Latin Language and Literature.)

SOCIOLOGY AND ECONOMICS.

Professor BLACKMAR.

Assistant Professor CONE.

Assistant Professor BOYNTON.

Mr. SAWYER, Fellow.

Prof. RICHARD T. ELY, of the University of Wisconsin,
lecturer on Problems of Industrial Evolution.

EQUIPMENT.

Instruction in the department of sociology and economics is conducted chiefly by lectures, and reading and investigation in the library, aided in certain courses by text-books. The University library contains about 3000 volumes relating to the courses of instruction. All of the principal magazines treating of the work of the department are on file in the reading-room for the use of the students. In addition there are charts, maps, and outlines. A limited amount of investigation of social conditions is carried on.

ADVICE AS TO CHOICE OF COURSES.

Sociology I lays the foundation of subsequent work in sociology, although it is possible for students who have studied other subjects in economics and history to take sociology II as it relates to the pathological conditions of modern society. Sociology I and II are culture studies, and should be taken by those who wish a general knowledge of the subject, and should be followed by sociology III and IV by those who wish to become proficient in the subject.

Sociology V and VI are also culture studies and follow a different line of work, although closely related to the other courses in sociology.

Economics I is an essential foundation to subsequent courses in economics. Economics II lays the foundation for economics VII, VIII, and IX. It is very desirable that students should consult with the instructors before choosing a group of studies in the department, as there are five more or less distinct lines of work, namely, sociology proper, ethnology, economic theory, economic history and statistics, and finance.

Sociology.

Courses I to VI, inclusive, are open to Juniors and Seniors of the College. These courses may also be taken by graduate students, with such additional work as may be required by the instructor.

COURSES FOR GRADUATES AND ADVANCED UNDERGRADUATES.

I.—ELEMENTS OF SOCIOLOGY. This study considers the principles of sociology, including a careful survey of social forces, social laws, social theories and social organization. This course gives a general survey of the whole subject, and follows the evolution of human society. It shows how society originates, how it grows, and analyzes the forces which cause its origin and development. The structure and activities of society are presented in a general way. 1st term, daily, at 1:30. Professor Blackmar.

II.—SOCIAL PATHOLOGY. A general study of pauperism, crime, charities and correction, and social problems. It treats largely of the causes of pauperism, crime and degeneracy and their remedies. Considerable attention is given to the management of charitable and penal institutions and the methods of reform. A limited amount of practical investigation is required, with written reports on the same, from all students. Description of tenement houses, social settlements, the condition of the poor in large cities, jails, reformatories, hospitals for the insane, penitentiaries, etc., is given. Each student is required to visit at least two social institutions, and report on the same. Lectures and library work. 2d term, daily, at 1:30. Professor Blackmar.

III.—SOCIALIZATION AND SOCIAL CONTROL. This is an advanced course for Juniors, Seniors and Graduates who have had course I. This course is for the purpose of giving a thorough study of pure sociology. Its work has to do with social forces, social theories, and the origin and development of methods of social control. A careful analysis of all of the social laws receives especial attention. Methods of socialization involves a study of aggregation, association and cooperation, as well as social inequalities and the methods of overcoming their evil effects. Lectures and collateral reading, with seminar reports by students. 1st term, daily, at 2:30. Mr. Boynton.

IV.—SOCIAL AND ECONOMIC STATISTICS. A practical course in social relation and social problems by the statistical method. Students are instructed in the technique of statistics, and the scope and meaning of statistical inquiry. A practical knowledge is derived from the handling of statistical data and in the construction of statistical tables, tabulations, etc. By the preparation of diagrams, charts, etc., in the laboratory, the graphic method is also introduced. It is aimed to make the course a practical one by the study of such sociological phenomena as populations, vital statistics, birth-rates, marriage-rates, death-rates, divorce, immigration, migration, etc., and in the investigation of such economic subjects as prices, trade and internal commerce, agricultural and manufacturing growth, and such industrial activities as admit of statistical inquiry. Some knowledge of economics and sociology is desirable. 2d term, daily, at 3:30. Mr. Boynton.

V.—GENERAL ANTHROPOLOGY. The natural history of man. The probable origin and antiquity of man. Comparison with the anthropoid apes. Man's physical, mental, and social characteristics. Methods of obtaining food, shelter, and distribution over the earth. Evidences of tertiary man. Relics of man found in the gravel drift, caves, and mounds. The beginnings of art and industry. The division of labor. The origin and development of language. Lectures and library work. 1st term, daily. Professor Blackmar.

VI.—ETHNOLOGY. Origin of races and ethnic groups. Racial differentiation and development. Characteristics of ethnic society. Why some ethnic groups survive and others become extinct. The conflict and survival of races. Their geographical distribution. Influence of geographical and physical environment. Comparison of natural and civilized races. Classification of existing races. Modern race problems. Lectures and library work. 2d term, daily. Professor Blackmar.

VII.—THE FAMILY. The origin and growth of the family historically considered. The family as the unit of society. The re-

lation of husband and wife and of parents and children. The economic basis of family life. The psychology of family life. The family as the type of society. Its importance in the preservation of society. The pathology of the family. The relation of the family to the general social organism, politically, religiously, and socially. Daily, 2d term, for half term only. Professor Blackmar.

COURSES FOR GRADUATES ONLY.

(Not more than two of the following courses will be given in one year. Courses XI, XII, and XIII are for students who expect to become specialists in anthropology).

VIII.—SOCIAL AND POLITICAL THEORIES. The first part of this course is devoted to the study of ancient and modern political theories. The laws of Moses as exemplified in the Hebrew commonwealth; Plato's Republic; Aristotle's Theory of Government; St. Augustine's City of God; Dante's *de monarchia*; Machiævelli's Prince; Campanella's City of the Sun; More's Utopia and Bacon's Atlantis are the principal works read and criticised. The second part of the term is devoted to modern socialistic theories, including French and German socialists and recent development in social democracy. Conducted as a seminar. By appointment. Professor Blackmar.

IX.—AMERICAN AND EUROPEAN CHARITIES. This course is especially for those who are looking forward to charity work or administration. A study of charity administration in the United States and some of the principal cities of Europe. Personal investigation of American charitable institutions with special reference to methods of state control. Hour by appointment. Professor Blackmar.

X.—AMERICAN ETHNOLOGY. Advanced course in the natural race of America. Migration and geographical distribution of tribes. Comparative characteristics of tribes and ethnic groups. Government and organization of tribes. The beginnings of civilization, the food supply, and the progress in the industrial arts. Hour by appointment. Professor Blackmar.

XI.—AMERICAN ETHNOLOGY. Continuation of course X.

XII.—PREHISTORIC ARCHÆOLOGY OF THE AMERICAN RACE.

XIII.—SOMATOLOGY.

Economics.

Courses I and II are open to all students of the College. Courses from II to X, inclusive, are for Juniors and Seniors, but may be taken also by graduates, with the addition of such extra work as may be required by the instructor.

COURSES FOR UNDERGRADUATES ONLY.

I.—ELEMENTS OF ECONOMICS. This course endeavors to develop and explain the general laws of man's activity in the production, distribution and consumption of wealth. It serves therefore as the foundation for a scientific understanding of human industrial actions and relations. The factors and general methods of production are analyzed; the nature and cause of value, and the functions and mechanism of exchange are studied; the laws determining the shares of product distributed as rent, wages, interest and profit are explained; the nature of human economic wants and their influence upon all branches of economic activity are examined. 1st term, daily, at 3:30. Mr. Cone.

II.—ECONOMIC HISTORY OF ENGLAND AND THE UNITED STATES. The object of this course is to trace and explain the general development of agriculture, industry, and commerce in England and the United States. In England the period covered extends from the Saxon invasion to the present time, and special attention is given to early agriculture, early town-life, merchant and craft guilds and other corporate privileges, and the rise of commerce, trade routes, markets and fairs. Special industries and their effect on English life are traced. The Agrarian revolution, the peasants' revolt, enclosures; the national policy in industry and trade, the mercantile system and the effect on English commerce, the great inventions of the eighteenth century, and the causes and nature of the industrial revolution, together with certain aspects of the English industrial supremacy of the past century, form the concluding features of the course.

In the economic history of the United States, attention is given to colonial agriculture and industry; to the industrial development of the North prior to 1860, and to the economic significance of slavery in the South, and in the country at large. The industrial development since the civil war, and the present industrial situation of the United States among the nations furnish investigation for the concluding part of the course. 2d term, daily, at 2:30. Mr. Boynton.

III.—MONETARY AND FINANCIAL HISTORY OF THE UNITED STATES. Principles of money and credit. The first part of this course will give a consecutive view of the experience of this country in providing mediums of exchange, in providing sources of government revenue, and in caring for and using the revenue. The laws of the United States in regard to currency, banking, public revenue, expenditure, and debt; the methods of administering those laws; and the resultant conditions, will be examined. The variety of this experience will furnish illustrations of the principles studied in the second part of the course, and will serve to test the correctness of

the theories. Banking is considered only so far as is necessary to show its general relation and importance as furnishing a large part of the credit money. This course should be preceded by course I. Course II will also be very helpful. 2d term, daily, at 3:30. Mr. Cone.

IV.—PUBLIC AND CORPORATE FINANCE. The theory of government expenditure is studied, illustrated by some reference to the experience of various governments. The various sources of government revenue are examined, taxation receiving chief attention. These offer many points of contrast and comparison with sources of corporate revenue. Fewer points of contrast and closer similarities are met with in treating of the creation, management and extinguishment of debt. The operations of refunding, of corporate reorganization, etc., are analyzed. The policy and practice of governments and corporations with respect to sinking-funds are considered. This course should be preceded by course I. The student will also find course III, taken either before or after this course, very helpful in completing his knowledge of the subject. 1st term, daily, at 2:30. Mr. Cone.

V.—ADVANCED ECONOMICS. The growth of economic theory in ancient, mediæval and modern times is briefly studied, chiefly from the works of the original writers, although the commentaries are not ignored. With this to furnish a foundation and background, the more extensive and more directly important economic literature of the nineteenth century is taken up. The aim is not only to acquaint the student with a more precise and complete body of economic theory than can be given to the beginning student in the elementary course, but also to show how the successive steps in the development of economics have been related to each other and to the developing world of industry. This course must be preceded by course I. Other courses, especially course II, will also be of great aid toward getting the best results from this course. 2d term, daily, at 2:30. Mr. Cone.

VI.—BANKING AND THE MONEY MARKET. The principles of banking are thoroughly studied, illustrated by a historical and comparative treatment of banking institutions in this and other countries. The present systems of banking in the United States are carefully analyzed, and their strong points as well as the points needing reform are pointed out. A thorough study of banking, as now carried on, necessitates also a study of the forms, methods and mechanism by which large payments, chiefly in some form of bank credit, are made at the present day. These and various connected phenomena constitute what has been somewhat awkwardly named "the money market." This course should be preceded by courses I and III. 1st term, daily, at 1:30. Mr. Cone.

VII.—THE HISTORY OF COMMERCE AND COMMERCIAL GEOGRAPHY.

A brief survey is made of the commerce and trade routes of the ancient peoples surrounding the Mediterranean sea, of the effect of the crusades and of the stimulus given to mediæval commerce by the Italian cities and the Hanseatic League, the position of the trader and the merchant, together with the commodities of early commerce, the restrictions, monopolies, trading companies, and national policies with reference to trade are also discussed. The effects on Europe of the period of discovery and colonization are also traced. The development of the commerce of the separate nations is concluded to the present time, the policies they have pursued in securing it, and the natural advantages each possesses in the competition of the world market. Considerable attention is devoted to the sources of raw materials, to the location of the demand and supply of finished products, and to the governmental activities to stimulate national prestige along commercial lines. This course should be preceded by courses I and II. 1st term, daily, at 11:15. Mr. Boynton.

VIII.—INTERNAL COMMERCE AND TRANSPORTATION. Primitive and improved methods of transportation are studied in their economic aspects. The historical development of the canal and the railway, their relation to each other and to society in this and other countries, the problems of local and individual discrimination, the theory of railroad rates, state ownership, regulation and control, all receive careful attention. The work of the Interstate Commerce Commission will be reviewed, as well as the history and financiering of several typical American railway systems. This course is open to students under the same conditions as course VII. 2d term, daily, at 11:15.

IX.—LABOR PROBLEMS AND THE HISTORY OF TRADE-UNIONISM. This course is designed to investigate those problems of labor arising from the existence of a laboring class, an employing class, and the mutual relations existing between the two. These peculiar problems, from the standpoint of employer and employee, under modern conditions of production and distribution, together with the history of trade-unionism in European countries and in America, form the principal features of the course. The course, then, is designed to furnish a general knowledge of the past and present conditions of the laboring man and his relation to his employer. It is desirable that Economics I and II should precede this course as preparation for it. First term, daily, at 3:30. Mr. Boynton.

X.—ECONOMICS OF INSURANCE. The economic principles underlying all forms of insurance, and especially the theory of the equalization of the burden of loss, receive careful attention. The general economic nature of risk is pointed out, risks are classified, and those

falling in the insurable class are given especial attention. The different groups of insurance—marine, fire, life, and various newer extensions of the principles to other kinds of risks—are treated. The various forms of insurance organization, as stock companies, mutual and fraternal organizations, and various modifications of these are considered. 2d term, (*a*), daily, at 1:30. Mr. Cone.

XI.—THEORY OF ACCOUNTING, AUDITING, AND ADJUSTING. The general principles underlying this field, illustrated by the study of some typical branches, will be developed by lectures and collateral reading. 2d term, (*b*), daily, at 1:30. Mr. Cone.

XII.—FOREIGN COMMERCE AND ECONOMIC STATISTICS. The object of this course is to investigate the subject of foreign commerce from a statistical and descriptive standpoint, and the bearing and relation of foreign trade on other economic subjects. The trade relations of the principal European countries, United States, South America, and the Orient will be investigated, and the relation of this trade to the markets of the world will be the main purpose of the course. It should be preceded by Sociology IV. 2d term, daily, at 4:30. Mr. Boynton.

COURSE FOR GRADUATES ONLY.

XIII.—SEMINARY OF SOCIOLOGY AND ECONOMICS. For the guidance of advanced students in particular lines of work. Hour by appointment. Professor Blackmar.

CONFERENCE OF SOCIOLOGY AND ECONOMICS.

Meets every two weeks, on Thursday, at 4:30, for the discussion of general subjects pertaining to the department of sociology and economics. It is open to all students of history, sociology, and economics. Lectures, reports and conferences on timely subjects represent what is accomplished. No credit is given for this course.

PROBLEMS OF INDUSTRIAL REVOLUTION.

A special course of lectures, involving a discussion of labor, trusts, monopolies, and socialism. Open to all students of sociology and economics and to others who have the time to take the course. Two weeks, daily, from October 18 to 31. Professor Ely.

SPANISH.

(See Romance Language and Literature.)

ZOOLOGY.

Associate Professor MCCLUNG.

Associate Professor HUNTER.

Professor DYCHE.

Mr. BLACKMAN.

EQUIPMENT.

The department is in the possession of ample facilities in the way of specimen and apparatus for the presentation of the courses outlined below. The extensive collections of birds and mammals are now rendered accessible by their location in the new Museum building. The historical development of vertebrate life is made teachable by the large paleontological collections in the museum. Representative types of invertebrates from the Atlantic and Pacific coasts, as well as from Bermuda, make possible the thorough treatment of almost any of the lower orders. Histological, cytological and embryological material of great variety has been provided. Microscopes, microtomes and other apparatus necessary for even the most advanced work are at hand. The well equipped preparation rooms make instruction in museum methods very thorough.

ADVICE AS TO THE CHOICE OF COURSES.

Course I is designed as an introduction to the subject, and, so far as possible, gives a general survey of the animal kingdom. The character of the work is such as to lay particular stress upon training in the independent observation and correlation of facts. It is, therefore, a course which may be taken by those who wish merely to gain a general idea of zoology and to become acquainted with the methods of scientific work. As an elementary course it forms a basis for any advanced work.

Course III logically follows course I, and should be taken by those who desire a more comprehensive view of the subject than can be gained in a half-year's study. While more advanced in character than the first course, it is not too technical for the general student. It should be taken by all wishing to continue in the more advanced courses.

Course II may be taken with advantage by students who have had course I, or preferably I and III, and who expect to teach zoology in the high school without making a specialty of the subject.

Course IV is the last of the general courses, and completes the work of preparation desirable for students who wish to take up a detailed study of zoology in more or less limited fields. It may fol-

low course I in the case of students who choose to enter directly into systematic work.

In all cases students are urged to secure during their Freshman and Sophomore years as much training as possible in physics, chemistry, botany, and the modern languages.

COURSES FOR UNDERGRADUATES.

I.—ELEMENTARY ZOOLOGY. A course in the general principles of zoology. The work consists of a laboratory study of type specimens, together with lectures upon classification, habits, distribution, etc. Open to all students of the College. 1st term, daily, 1:30 to 3:30. Professor McClung and Mr. Blackman.

II.—TEACHERS' COURSE. A course in zoology designed for those who expect to teach. Methods used in collecting, preserving and preparing specimens for the museum and classroom. Methods of instruction. Open to all who have taken course I or its equivalent. 1st term, daily, 3:30 to 5:30. Professor Dyche.

COURSES FOR UNDERGRADUATES OR GRADUATES.

III.—MORPHOLOGICAL ZOOLOGY. A continuance of the work begun in course I, pursued, however, in a more thorough and detailed way. Open to Juniors, Seniors and Graduates who have taken course I. Throughout the year, daily, 1:30 to 3:30. Professor McClung or Mr. Blackman.

IV.—SYSTEMATIC AND DESCRIPTIVE ZOOLOGY. Lectures, with exhibition of specimens. Laboratory work in systematic zoology. Open to Juniors, Seniors and Graduates who have taken course I. Throughout the year, 3:30 to 5:30. Professor Dyche.

V.—HISTOLOGY, OR MICROSCOPIC ANATOMY. Microscopical manipulation, the study of normal tissues and the methods of preparing mounted objects are presented in this course. Lectures and laboratory work. Open to Juniors, Seniors and Graduates who have taken course I. 1st term, daily, 3:30 to 5:30. Mr. Blackman.

VI.—CYTOLOGY, OR CELLULAR BIOLOGY. A course in cell structure and development. Lectures and laboratory work. Open to Juniors, Seniors and Graduates who have taken course V. Throughout the year, by appointment. Professor McClung.

VII.—EMBRYOLOGY. The ontogeny of the chick, shark, etc. Open to Juniors, Seniors and Graduates who have taken course IV. 2d term, by appointment. Professor McClung.

VIII.—PALEOZOOLOGY. A course dealing with the succession of animal life upon the earth. Open to Juniors, Seniors and Graduates who have had course I. Geology I is recommended as further preparatory work. By appointment. Professor McClung.

IX.—ECHINODERMS. This course deals with the development and morphology of echinoderms. Open to Juniors, Seniors and Graduates who have taken course I. One term, by appointment. Professor Hunter.

IX^a.—VERMES. The development and morphology of vermes. For those who intend to study medicine, special attention is given to parasitic forms. One term, by appointment. Professor Hunter.

COURSES FOR GRADUATES ONLY.

X.—ADVANCED ORIGINAL WORK IN MORPHOLOGICAL ZOÖLOGY. Throughout the year, by appointment. Professor McClung.

XI.—ADVANCED ORIGINAL WORK IN SYSTEMATIC AND DESCRIPTIVE ZOÖLOGY. Throughout the year, by appointment. Professor Dyche.

XII.—ADVANCED ORIGINAL WORK IN HISTOGENESIS AND ORGANOGENESIS. Throughout the year, by appointment. Professor McClung.

XIII.—ADVANCED ORIGINAL WORK IN CYTOLOGY. Throughout the year, by appointment. Professor McClung.

XIV.—ADVANCED ORIGINAL WORK IN VERTEBRATE PALEONTOLOGY. Throughout the year, by appointment. Professor McClung.

XV.—MUSEUM WORK AND METHODS. By appointment. Professor Dyche.

XVI.—COMPARATIVE ANATOMY AND OSTEOLOGY. By appointment. Professor Dyche.

Students desiring to do graduate work in the department must be able to read French and German, and must have special preparation for the work they wish to undertake. It is recommended that at least four terms' work be offered for the major requirement of the master's degree.

III. The School of Engineering.

Faculty.

FRANK STRONG, Ph. D., President.

FRANK O. MARVIN, A. M., Dean. Professor of Civil Engineering.

EPHRAIM MILLER, Ph. D., Professor of Mathematics and Astronomy.

WILLIAM H. CARRUTH, Ph. D., Professor of Germanic Languages.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

LUCIEN I. BLAKE, Ph. D., Professor of Physics and Electrical Engineering.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

ERASMUS HAWORTH, Ph. D., Professor of Physical Geology and Mineralogy.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

HENRY B. NEWSON, Ph. D., Associate Professor of Mathematics.

EDWARD BARTOW, Ph. D., Associate Professor of Chemistry.

HUGO DIEMER, M. E., Associate Professor of Mechanical Engineering.

FRANK E. WARD, Superintendent of Fowler Shops.

MARTIN E. RICE, M. S., Secretary. Assistant Professor of Physics and Electrical Engineering.

FRANK E. BRYANT, A. M., Assistant Professor of English.

ELMER F. ENGEL, A. M., Assistant Professor of German.

WALTER R. CRANE, Ph. D., Assistant Professor of Mining Engineering.

HAMILTON P. CADY, Ph. D., Assistant Professor of Chemistry.

GEORGE L. LINCOLN, A. M., Assistant Professor of Romance Languages and Literatures.

WILLIAM C. HOAD, B. S., Assistant Professor of Civil Engineering.

GEORGE J. HOOD, B. S., Assistant Professor of Mechanical Drawing.

JOHN N. VAN DER VRIES, Ph. D., Assistant Professor of Mathematics.

FREDERIC N. RAYMOND, A. M., Assistant Professor of English.

RICHARD M. FREEMAN, E. E., Assistant Professor of Electrical Engineering.

EDWY L. TAYLOR, Ph. B., Assistant Professor of Civil Engineering.
DAVID F. MCFARLAND, A. M., Assistant Professor of Chemistry.
CHARLES H. ASHTON, A. M., Assistant Professor of Mathematics.
EDWIN F. STIMPSON, B. S., Instructor in Physics Laboratory.
GEORGE W. HANSON, Forge and Foundry Instructor.
FRANK E. JONES, Instructor in Pattern-making.

Purpose of the School.

The School of Engineering is the scientific or technical school of the University. It offers what is, in the main, technical training in the various departments of engineering—civil, electrical, mechanical, mining, and chemical. The course in civil engineering includes work in municipal and sanitary engineering, that work not yet being erected into a separate department. The courses offered in the School of Engineering also include as much work from the College for cultural training as circumstances allow.

Degrees.

All courses in the School of Engineering lead to the degree of bachelor of science.

All work for higher degrees is under the supervision of the Faculty of the Graduate School. For the regulations governing the granting of advanced degrees, see announcements under the head of "Graduate School." For the work open to graduate students, see "Courses of Instruction."

Admission.

There are two methods of admission to the School of Engineering of the University; first, by examination; second, by certificate.

1. By Examination.

Times and place of examination for admission to the School of Engineering are the same as for admission to the College given on page 66 of this catalogue. Candidates may divide the examination between two years, as noted on page 66.

2. By Certificate.

Nearly all students enter the School of Engineering by certificate from high school, academies, preparatory schools of other colleges and universities, or from military schools accredited by the University. The candidate for admission by certificate must present either a certificate or other credential, as noted on page 66, in con-

nection with admission to the College. The same rules apply in regard to admission by certificate to the School of Engineering as apply for admission to the College.

Deficiencies and Units of Admission.

The candidate may be admitted although deficient in some of the requirements as laid down below, provided such deficiency does not exceed three units, and that not more than one unit be in any one required subject. All deficiencies must be made good within such time as may be fixed in each individual case by the Dean of the School of Engineering.

An entrance unit represents five periods a week, of not less than forty minutes each for thirty-five weeks. A unit in the School of Engineering represents five periods a week for a half year. In making up deficiencies one School of Engineering unit is counted as equivalent to one entrance unit.

College Credit.

College credit for work in preparatory schools will be given upon examination only. For times and place of such examination, see page 66.

Subjects for Admission.

Fifteen units are required for admission.

REQUIRED.		OPTIONAL.	
Mathematics 1, 2, 3, algebra and plane and solid geometry	3 units.	Latin 1, 2, 3,	3 units.
English 1, 2, 3,	3 "	German 1, 2, 3,	3 "
Physics	1 "	French 1, 2, 3,	3 "
Chemistry	1 "	Greek and Roman history	1 "
Free-hand drawing	1 "	English history	1 "
Modern foreign language—		American history	1 "
may be French or		Physical geography	1 "
German, or		Botany	1 "
2 of French and		Zoology	1 "
1 of German, or		Economics	1 "
1 of French and		Manual training	1 "
2 of German	3 "		
Required, 12 units.			
Optional, 3 units.			
Total, 15 units.			

Three units must be chosen from the optional list.

Accredited Schools.

The list of schools accredited to the School of Engineering is practically the same as that of schools accredited to the College, pages 85-87.

Admission to Advanced Studies.

For any advanced rank, the applicant must have completed all of the studies of the course below the rank for which he applies, including the entrance requirements, or their substantial equivalent, as determined by the committee on advanced standing. Applicants for credits in single subjects will also be passed upon by this committee.

Special Students.

Opportunity is given in the School of Engineering for the admission of persons of mature years who desire to pursue some special line of work, without following any prescribed course or becoming candidates for a degree.

The admission of such special students is directly under the control of the Dean of the School of Engineering, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired and must also meet other requirements as fixed by the various faculties.

Special students are subject to the same regulations as regular students with regard to the quality of work performed and attendance at recitations and examinations, but not as to number of studies to be pursued.

Registration and Enrolment.

All candidates for admission to the School of Engineering having high-school certificates, and all students intending to pursue their studies in the ensuing year, must present themselves for registration at the University on September 7 to 10, inclusive, 1904. Registration at a later date will be permitted only on the presentation of a satisfactory reason for the delay.

The Dean of the School of Engineering is charged with the execution of all University and Faculty rules relating to the enrolment of students in classes and their choice of studies.

Upon registration, each student will receive from the Registrar a certificate of his standing, which he will present to the Dean of his school, together with a list of the studies which he desires to pursue. This choice must be approved by the Dean.

Inadequate Preparation.

When students show by their current work insufficient entrance preparation in any study, they may be required to make good such deficiency in any manner prescribed by their instructors.

Grades and Failures.

Examinations are held at regular stated periods and at such other times as may be provided for by the regulations of the Faculty.

At the close of each term, a summary of the students' work is reported to the Registrar, for entry upon the general record. At the end of each half-year, the parent or guardian of each student, or the student, if requesting it, will be furnished a copy of the entries relating to that student.

Absence from examination or failure in more than one-third of his work, in any one term, severs a student's connection with the University.

Expenses.

By legislative enactment each student from the state of Kansas in the School of Engineering must pay a matriculation fee of five dollars (paid but once, on entrance), and a yearly incidental fee of ten dollars. Non-residents of Kansas must pay a matriculation fee of ten dollars, and an incidental fee of forty dollars.

Shop and Laboratory Supplies.—All the laboratories of the University and their equipment of power engines, machinery, light, desks, tables, balances, microscopes, models and complete apparatus are at the disposal of students, under the direction of their instructors, free of cost. These desks, benches and tables will be further provided with individual sets of tools, sets of working apparatus and equipment, for which the student will be held responsible and expected to return in good condition. Students are requested to check these up at time of entering a laboratory course to see that they get all that are charged to them. At the end of the course, or at the discretion of the instructor, all the individual equipment, in good order, must be returned. Such as may have been lost, damaged, broken or destroyed by the student must be paid for by him at that time. Material of every kind consumed, ground up or used in the manifold experiments and practices in laboratories must be paid for by the student, but may be secured where the student elects. Students providing themselves with the exact change may obtain this of the storekeeper in any quantity at the various department store-rooms at its cost. For the economic and prompt supply of such material, coupon books, good in all departments, are furnished at the business office, in the amounts of five dollars and two dollars. Any coupons unused are redeemable in cash at the Secretary's office at the end of the course.

Summer Field Work. No fee will be charged for the use of instruments in summer field work. Each student will be charged the actual cost of living, and incidental expenses.

Other Expenses. There are no dormitories connected with the University. Students find accommodations in the boarding-houses

and homes of Lawrence. Information concerning the location of rooming- and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at \$3.75 a week. Some persons who furnish plain rooms and good, plain food receive boarders at \$3 or even \$2.50 a week. Day board in private families and at city restaurants may be obtained for \$2.50 to \$3 a week. Day board in clubs varies from \$2.25 to \$3 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$12 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

The following table shows the estimated expenses of a student of the University for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends upon the tastes and habits of the student:

	<i>Low.</i>	<i>Average.</i>
Board.....	\$80 00	\$120 00
Room	20 00	30 00
Books and stationery	8 00	15 00
Laundry	8 00	20 00
Matriculation and other fees..	15 00	15 00
Incidentals.....	15 00	50 00
Totals.....	\$146 00	\$250 00

Self-help. Many students find work in private families, in offices, and in various occupations, by means of which they defray a portion of their expenses. Some students have earned their entire expenses while in attendance, and have made good records at the same time; other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they came. If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is comparatively easy for a young man to earn half his living while attending the University and yet do good work in his classes. The student should bring with him at least enough money to live comfortably for a few weeks, until he finds something to do. The University cannot guarantee work to any student, but will lend every possible assistance in finding employment. The University Christian Associations maintain employment bureaus, where the names of those seeking work and of those desiring workers are recorded. Students desiring to help themselves are advised to apply early to the University Y. M. C. A. and Y. W. C. A. or to the Registrar, University of Kansas, Lawrence!

Courses of Study.

Leading to the Degree of Bachelor of Science.

The courses of study in the School of Engineering are almost entirely required. The work is in the main technical, and requires preparation of a high order, especially in mathematics. It also requires exhaustive effort in the courses themselves, which call for the entire time of the student to do it satisfactorily.

The work of the Freshman year is common to all students of the School of Engineering, so that a choice between the several lines of engineering need not be made until after a year's experience with college life. As a further aid in making an intelligent choice, the general aims of the several courses are here briefly stated.

Civil Engineering. The first aim is to impart as broad a scientific training as the length of the course and the essential professional studies will allow, so that as many avenues to successful service as possible may be open to the graduate. Along professional lines, emphasis is laid first on work in surveying and field methods, as these are of special value to young engineers; second, on mechanics and its applications to the designs of roofs and bridges and other structures; third, on railway location and construction; fourth, on hydraulics and its applications to irrigation and canal work; fifth, on sanitary and municipal engineering, including water-supply, sewerage, and roads and pavements. Stress is placed on the study of principles, as being the things not likely to be acquired in after-life.

Electrical Engineering.—The course in electrical engineering is designed to train the student in those fundamental principles of applied mathematics, chemistry, mechanics and electricity which form the basis of all successful specialization. The laboratory and shop work is arranged to develop and to encourage individual skill and ingenuity. Such experience in practical work as is possible is also included. The thesis work involves original investigation.

Mechanical Engineering.—This course offers thorough preparation in the scientific subjects in which the engineer must be trained who is to devote himself to questions involved in the designing, manufacturing and operating of machinery of every description, and in the filling of executive positions in manufacturing industries. The function of this course is two-fold: To offer to the students of the other engineering courses such lines of work as their particular needs require, and to afford students of the University an opportu-

nity to specialize in the direction of the purely mechanical side of engineering. Especial stress is laid upon the designing of machinery and the preparation of the necessary working-drawings, the cultivation of the inventive ability, a familiarity with the operations involved in the construction of engines, boilers, machinery, and mechanical appliances of all kinds, and the principles governing correct factory design, equipment, and organization.

Mining Engineering.—The object of the course in mining is to qualify students for future work in prospecting, mining, milling, and smelting, in accordance with modern scientific principles. In adopting the course of study, it was endeavored to include a sufficient requirement in language work to give the student a good knowledge of English, French, and German, and to adjust the various essential subjects—mathematics, engineering, chemistry, metallurgy, mining, mineralogy, and geology—so that upon the completion of the course one may be well qualified for specializing along any line which his future life may make desirable.

Chemical Engineering.—This course affords students an opportunity to specialize in chemistry, and to fit themselves for positions as chemists, managers or superintendents of manufacturing plants where the work is based on chemical science. This would include such industries as that of iron, zinc, gold and silver, smelting and refining, the making of fertilizers, clay-working, sugar-refining, dyeing, bleaching, gas-making, cement-making, and general chemical manufacture. The course is broad enough for general training, and may be made special enough for technical work.

Work in Common.

FRESHMAN YEAR.

All students of the School of Engineering have work in common during the Freshman year, the differentiation between courses occurring in the Sophomore year.

First Term:

English I, daily, at 8, 9, or 4:30. Miss Lynn and assistants.

Scientific French (French IX), daily, at 11:15. Mr. Lincoln.

Algebra (a) and Plane Trigonometry (b) (Mathematics II), daily, at 8, 10:15, or 3:30. Mr. Van der Vries and assistants.

Free-hand Drawing (Mechanical Drawing I), three times a week for first six weeks of term. Monday, Wednesday, and Friday, from 8 to 10, or 1:30 to 3:30; or Tuesday and Thursday, from 1:30 to 3:30, and Saturday, from 8 to 10. Mr. Hood.

Geometrical Drawing (Mechanical Drawing II), three times a

week for last fourteen weeks of term. Same days and hours as for free-hand drawing. Mr. Hood.

Shop Work I, one-half day per week. Mr. Ward and Mr. Hanson.

Second Term:

Scientific German (German III), daily, at 8. Mr. Engel.

Analytical Geometry (Mathematics IV), daily, at 10:15 or 1:30. Mr. Van der Vries and Mr. Ashton.

Descriptive Geometry (Mechanical Drawing III), daily, at 8, 9, or 4:30. Mr. Hood, Mr. Taylor, and assistant.

Projection Drawing (Mechanical Drawing IV), three times a week, Monday, Wednesday, and Friday, from 8 to 10 or 1:30 to 3:30; or Tuesday and Thursday from 1:30 to 3:30 and Saturday from 8 to 10. Mr. Hood and assistants.

Shop Work II, one-half day per week. Mr. Jones.

For irregular students, classes in English, Algebra and Trigonometry are given in the second term, and classes in Analytical and Descriptive Geometry are given in the first term.

Civil Engineering.

SOPHOMORE YEAR.

First Term:

Physics IV. Lectures four days a week, at 11:15, and laboratory two hours a week. Professor Blake and Mr. Stimpson.

Chemistry II, daily, 8 to 10. Mr. Cady and Mr. Gustafson.

Calculus (Mathematics V), daily, at 9 or 10:15. Professor Newson and Mr. Van der Vries.

Shades, Shadows, and Perspective (Mechanical Drawing V), Tuesday, Thursday, and Friday, 1:30 to 3:30. Mr. Taylor.

Shop Work III, one afternoon a week, 1 to 6. Mr. Ward.

One technical report.

Second Term:

Physics V. Lectures four days a week, at 11:15, and laboratory two hours a week. Professor Blake and Mr. Stimpson.

Surveying (Civil Engineering V), daily, at 10:15. Mr. Hoad.

Qualitative Analysis (Chemistry III), daily, 8 to 10. Mr. Cady and Mr. Gustafson.

Topographical Drawing (Civil Engineering I), Tuesday, Thursday, and Friday, 1:30 to 3:30. Mr. Taylor.

Shop Work IV, one afternoon a week, 1 to 6. Mr. Ward.

One technical report.

Summer Vacation :

Surveying (Civil Engineering VI). Mr. Hoad and Mr. Taylor.

JUNIOR YEAR.

First Term :

Mechanics I, daily, at 11:15. Professor Marvin.

Advanced English Composition (English II), Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Mr. Raymond.

Geology I, daily, at 3:30. Professor Haworth.

Railway Surveying (Civil Engineering XI), daily, at 10:15. Mr. Hoad.

Railway Drawing (Civil Engineering II), Tuesday, Thursday, and Friday, 1:30 to 3:30. Mr. Hoad.

Second Term :

Strength of Materials (Mechanics II), four days a week, at 10:15. Professor Marvin.

Engines and Boilers (Mechanical Engineering V), daily, at 11:15. Professor Diemer.

Location of Railways (Civil Engineering X), daily, first three-fifths of term, at 9. Mr. Hoad.

Roads and Pavements (Civil Engineering IX), daily, last two-fifths of term, at 9. Mr. Hoad.

Graphical Statics (Civil Engineering III), Tuesday, Thursday, and Friday, 1:30 to 3:30. Mr. Hoad.

Testing Laboratory (Mechanics III), once a week, Tuesday or Thursday, 1:30 to 5:30; or Saturday, 8 to 12. Mr. Hood.

One technical report.

Summer Vacation :

Surveying (Civil Engineering VI), Mr. Hoad and Mr. Taylor.

SENIOR YEAR.

First Term :

Hydraulics (Mechanics IV), (a), four days a week, at 10:15. Mr. Taylor.

Hydraulic Machinery (Mechanical Engineering X), (b), four days a week, at 10:15. Professor Diemer.

Hydraulic Laboratory (Mechanics V), Tuesday, Thursday, or Friday, 3:30 to 5:30. Mr. Taylor.

Roofs and Bridges (Civil Engineering XIV), daily, 1:30 to 3:30. Professor Marvin.

Sewerage (Civil Engineering XII), (a), daily, at 11:15. Mr. Hoad.

Water-supply (Civil Engineering XIII), (b), daily, at 11:15. Mr. Hoad.

Masonry (Civil Engineering VIII), (b), daily, at 9. Mr. Taylor.
One technical report.

Second Term :

Bridge Designing (Civil Engineering XV), daily, 1:30 to 3:30.
Professor Marvin.

Contracts and Specifications (Civil Engineering IV), (b), daily, at
11:15. Professor Marvin.

Cement Laboratory (Civil Engineering VII), Tuesday and Thurs-
day, 3:30 to 5:30. Mr. Taylor.

One full term's work chosen from engineering or mathematical
subjects not required in course.

Thesis.

Electrical Engineering.

SOPHOMORE YEAR.

First Term :

Physics IV. Lectures four days a week, at 11:15, and laboratory
two hours a week. Professor Blake and Mr. Stimpson.

Calculus (Mathematics V), daily, at 9 or 10:15. Professor New-
son and Mr. Van der Vries.

Chemistry II, daily, 8 to 10. Mr. Cady and Mr. Gustafson.

Machine Drawing (Mechanical Drawing VI), Monday, Wednes-
day, and Friday, 3:30 to 5:30. Mr. Hood.

Shop Work III, one afternoon a week, 1 to 6. Mr. Ward.

One technical report.

Second Term :

Qualitative Analysis (Chemistry III), daily, 8 to 10. Mr. Cady
and Mr. Gustafson.

Physics V. Lectures four days a week, at 11:15, and laboratory
two hours a week. Professor Blake and Mr. Stimpson.

Principles of Mechanism (Mechanical Engineering III), Monday,
Wednesday, and Friday, at 10:15. Professor Diemer.

Machine Design (Mechanical Engineering II). Lectures Tues-
day and Thursday, at 10:15. Mr. Hood.

Machine Designing (Mechanical Engineering I), Monday, Wednes-
day, and Friday, 3:30 to 5:30. Mr. Hood.

Shop Work IV, one afternoon a week, 1 to 6. Mr. Ward.

One technical report.

JUNIOR YEAR.

First Term :

Analytical Mechanics (Mechanics I), daily, at 11:15. Professor
Marvin.

Theory of Electricity and Magnetism (Electrical Engineering I), daily, at 10:15. Professor Blake.

Differential Equations (Mathematics VI), Monday, Wednesday, and Friday, at 9. Professor Miller.

Advanced English Composition (English II), Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Mr. Raymond.

Electrical Laboratory (Electrical Engineering VI), two afternoons a week, 2:30 to 5:30. Mr. Rice.

Shop Work V, one afternoon a week, 1 to 6. Mr. Ward.

Second Term:

Dynamo Machinery (Electrical Engineering III), three days a week, at 8. Mr. Rice.

Engines and Boilers (Mechanical Engineering V), daily, at 11:15. Professor Diemer.

Theory of Alternating Currents (Electrical Engineering II), daily, at 9. Professor Blake.

Electrical Laboratory (Electrical Engineering VII), one afternoon a week, 1:30 to 5:30. Mr. Rice.

Strength of Materials (Mechanics II), four days a week, at 10:15. Professor Marvin.

Testing Laboratory (Mechanics III), Tuesday or Thursday, 1:30 to 5:30, or Saturday, 8 to 12. Mr. Hood.

Shop Work VI, one afternoon a week, 1 to 6. Mr. Ward.

One technical report.

SENIOR YEAR.

First Term:

Dynamo Machinery (Electrical Engineering IV), daily, at 1:30. Mr. Freeman.

Thermodynamics (Mechanical Engineering VI), four days a week, at 11:15. Professor Diemer.

Physical Chemistry (Chemistry XVI), daily, at 8. Mr. Cady.

Dynamo Design (Electrical Engineering V), daily, 9 to 11:15. Mr. Freeman.

Electrical Laboratory (Electrical Engineering VIII), two afternoons a week, 2:30 to 5:30. Mr. Freeman.

Engineering Laboratory (Mechanical Engineering XIV), one afternoon, four hours a week, Tuesday or Thursday. Professor Diemer.

Electrical Society, once a week.

One technical report.

Second Term :

Mechanical Methods and Practice (Electrical Engineering XII),
(a), daily, at 9. Mr. Ward.

Electro-technical Literature (Electrical Engineering XV), (b),
daily, at 9. Mr. Freeman.

Specifications and Contracts (Civil Engineering IV), (b), daily,
at 11:15. Professor Marvin.

Professional Thesis (Electrical Engineering XIII), two after-
noons a week, 2:30 to 5:30. Mr. Freeman.

Two full terms' work to be chosen from any engineering or
mathematical courses offered, subject to the approval of the
department of electrical engineering. See especially courses
IX, X and XI in electrical engineering.

Mechanical Engineering.

SOPHOMORE YEAR.

First Term :

Physics IV. Lectures four days a week, at 11:15, and laboratory
two hours a week. Professor Blake and Mr. Stimpson.

Calculus (Mathematics V), daily, at 9 or 10. Professor Newson
and Mr. Van der Vries.

Chemistry II, daily, 8 to 10. Mr. Cady and Mr. Gustafson.

Machine Drawing (Mechanical Drawing VI), Monday, Wednes-
day, and Friday, 3:30 to 5:30. Mr. Hood.

Shop Work III, one afternoon a week, 1 to 6. Mr. Ward.

One technical report.

Second Term :

Physics V. Lectures four days a week, at 11:15, and laboratory
two hours a week. Professor Blake and Mr. Stimpson.

Qualitative Analysis (Chemistry III), daily, 8 to 10. Mr. Cady
and Mr. Gustafson.

Principles of Mechanism (Mechanical Engineering III), Monday,
Wednesday, and Friday, at 10:15. Professor Diemer.

Machine Design (Mechanical Engineering II). Lectures Tuesday
and Thursday, at 10:15. Mr. Hood.

Machine Designing (Mechanical Engineering I), Monday, Wed-
nesday, and Friday, 3:30 to 5:30. Mr. Hood.

Shop Work IV, one afternoon a week, 1 to 6. Mr. Ward.

One technical report.

JUNIOR YEAR.

First Term :

Analytical Mechanics (Mechanics I), daily, at 11:15. Professor
Marvin.

Boiler Design (Mechanical Engineering IV), Monday and Wednesday, 2:30 to 5:30. Professor Diemer.

Dynamo Machinery (Electrical Engineering XIV), daily, at 10:15. Mr. Rice.

Advanced English Composition (English II), Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Mr. Raymond.

Engineering Laboratory (Mechanical Engineering XIV), Tuesday or Thursday, 1:30 to 5:30. Professor Diemer.

Shop Work V, one afternoon a week, 1 to 6. Mr. Ward.

Mechanical Engineering Society, once a week.

Second Term :

Strength of Materials (Mechanics II), four days a week, at 10:15. Professor Marvin.

Engines and Boilers (Mechanical Engineering V), daily, at 11:15. Professor Diemer.

Mechanical Methods and Practice (Electrical Engineering XII), (a), daily, at 9. Mr. Ward.

Heating Systems (Mechanical Engineering XII), (b), daily, at 9. Professor Diemer.

Steam-engine Graphics (Mechanical Engineering VII), Monday, 2:30 to 5:30. Professor Diemer.

Testing Laboratory (Mechanics III), Tuesday or Thursday, 1:30 to 5:30, or Saturday 8 to 12. Mr. Hood.

Shop Work VI, one afternoon a week, 1 to 6. Mr. Ward.

Five half-days in boiler- and engine-room required of each student during the term, in connection with course in engines and boilers.

Mechanical Engineering Society, once a week.

One technical report.

SENIOR YEAR.

First Term :

Mechanics of Fluids (Mechanics IV), (a), Monday, Tuesday, Wednesday, and Thursday, at 10:15. Mr. Taylor.

Hydraulic Machinery (Mechanical Engineering X), (b), four days a week, at 10:15. Professor Diemer.

Hydraulic Laboratory (Mechanics V), Tuesday, Thursday, or Friday, 3:30 to 5:30. Mr. Taylor.

Thermodynamics (Mechanical Engineering VI), Monday, Tuesday, Wednesday, and Thursday, at 11:15. Professor Diemer.

Roofs and Bridges (Civil Engineering XIV), daily, 1:30 to 3:30. Professor Marvin.

Steam-engine Design (Mechanical Engineering VIII), Monday and Wednesday, 3:30 to 5:30. Professor Diemer.

Thesis Work (Mechanical Engineering XIII), Friday, 1:30 to 5:30.

Mechanical Engineering Society, once a week.

One technical report.

Second Term :

Factory Economics (Mechanical Engineering XI), (a), daily, at 9. Professor Diemer.

Specifications and contracts (Civil Engineering IV), (b), daily, at 11:15. Professor Marvin.

Metallurgy (Chemistry XV), daily, at 8. Professor Bailey.

Advanced Machine Design (Mechanical Engineering IX), Monday or Wednesday, 2:30 to 5:30. Professor Diemer.

Advanced Engineering Laboratory (Mechanical Engineering XV), Tuesday or Thursday, 1:30 to 5:30. Professor Diemer.

Thesis Work (Mechanical Engineering XIII), Friday, 1:30 to 5:30.

Mechanical Engineering Society, once a week.

Mining Engineering.

SOPHOMORE YEAR.

First Term :

Chemistry II. Lectures and laboratory, daily, 8 to 10. Mr. Cady and Mr. Gustafson.

Calculus (Mathematics V), daily, at 10:15. Professor Newson and Mr. Van der Vries.

Elementary Geology (Geology I). Lectures, daily, at 3:30. Professor Haworth.

Machine Drawing (Mechanical Drawing VI), Monday, Wednesday and Friday, at 4:30. Mr. Hood.

Shop Work III, Saturday morning. Mr. Ward.

Mining Journal Meeting, one hour a week.

One technical report.

Second Term :

Qualitative Analysis (Chemistry III), daily, 8 to 10. Mr. Cady and Mr. Gustafson.

Surveying (Civil Engineering V), daily, at 10:15. Mr. Hoad.

Mineralogy (Mineralogy I). Lectures and laboratory work, daily, from 3:30 to 5:30. Professor Haworth and assistant.

Shop Work IV, one-half day a week. Mr. Ward.

Topographical Drawing (Civil Engineering I), Tuesday, Thursday, and Friday, 1:30 to 3:30. Mr. Taylor.

Mining Journal Meeting, one hour a week.

One technical report

Summer Vacation :

Surveying (Civil Engineering VI), four weeks. Mr. Hoad and Mr. Taylor.

JUNIOR YEAR.

First Term:

Physics IV. Lectures four days a week, at 11:15, and laboratory two hours a week. Professor Blake and Mr. Stimpson.

Economic Geology (Geology III) Lectures, daily, at 9. Professor Haworth.

Mining I, daily, by appointment. Mr. Crane.

Quantitative Analysis (Chemistry VII). Lectures and laboratory work, daily, 3:30 to 5:30. Professor Bailey.

Mining Journal Meeting, one hour a week.

One technical report.

Second Term:

Physics V. Lectures four days a week, at 11:15, and laboratory two hours a week. Professor Blake and Mr. Stimpson.

Assaying (Chemistry XI). Daily, 8 to 10. Professor Bartow.

Mining II, daily, by appointment. Mr. Crane.

Mining Journal Meeting, one hour a week.

One technical report.

Summer Vacation:

Summer Excursion Work (Mining VII) six weeks. Professor Haworth and Mr. Crane.

SENIOR YEAR.

First Term—Required:

Mining III, by appointment. Mr. Crane.

Advanced English Composition (English II), Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Mr. Raymond.

Mechanics I, daily, at 11:15. Professor Marvin.

Mining Journal Meeting, one hour a week.

One term's work from any geological, engineering or mathematical subjects not taken in course.

Second Term:

Strength of Materials (Mechanics II), four days a week, at 10:15. Professor Marvin.

Testing Laboratory (Mechanics III), Tuesday or Thursday, 1:30 to 5:30, or Saturday, 8 to 12. Mr. Hood.

Mining IV, and Mining V, daily, by appointment. Mr. Crane.

Specifications and Contracts (Civil Engineering IV), (b), daily, at 11:15. Professor Marvin.

Professional Thesis. Professor Haworth and Mr. Crane.

Mining Journal Meeting.

Chemical Engineering.

SOPHOMORE YEAR.

First Term :

Physics IV. Lectures, four days a week, at 11:15, and laboratory two hours a week. Professor Blake and Mr. Stimpson.

Chemistry II, daily, 8 to 10. Mr. Cady and Mr. Gustafson.

Calculus (Mathematics V), daily, at 9 or 10:15. Professor Newson and Mr. Van der Vries.

Machine Drawing (Mechanical Drawing VI), Monday, Wednesday, and Friday, 3:30 to 5:30. Mr. Hood.

Shop Work III, one afternoon a week, 1 to 6. Mr. Ward.

Chemical Journal Meeting, Thursday, at 5:30.

One technical report.

Second Term :

Physics V. Lectures, four days a week, at 11:15, and laboratory work two hours a week. Professor Blake and Mr. Stimpson.

Qualitative Analysis (Chemistry III), daily, 8 to 10. Mr. Cady and Mr. Gustafson.

Mineralogy (Mineralogy I), daily, 3:30 to 5:30. Professor Haworth and assistant.

Shop Work IV, one-half day a week. Mr. Ward.

Chemical Journal Meeting, Thursday, at 5:30.

One technical report.

JUNIOR YEAR.

First Term :

Mechanics I, daily, at 11:15. Professor Marvin.

Advanced English Composition (English II), Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Mr. Raymond.

Quantitative Analysis (Chemistry VII), daily, 1:30 to 5:30. Professor Bailey.

Chemical Journal Meeting, Thursday, at 5:30.

Second Term :

Strength of Materials (Mechanics II), four days a week, at 10:15.

Professor Marvin.

Testing Laboratory (Mechanics III), Tuesday or Thursday, 1:30 to 5:30, or Saturday, 8 to 12. Mr. Hood.

Organic Chemistry (Chemistry XII), daily, 3:30 to 5:30. Professor Bartow.

Assaying (Chemistry XI), daily, 8 to 10. Professor Bartow.

Chemical Journal Meeting, Thursday, at 5:30.

One technical report.

SENIOR YEAR.

First Term :

Physical Chemistry (Chemistry XVI), daily, at 10:15. Mr. Cady.

And two of the following: (1) Mechanics IV, Mechanical Engineering XI, and Mechanics V. (2) Civil Engineering XII and XIII. (3) Mechanical Engineering VI. (4) Electrical Engineering XIV. (5) Mining Engineering I. (6) Geology I. (7) Chemistry XIII, The College. (8) Chemistry IV, The College.

Chemical Journal Meeting, Thursday, at 5:30.

One technical report.

Second Term :

Metallurgy (Chemistry XV), daily, at 8. Professor Bailey.

Specifications and Contracts (Civil Engineering IV), (b), daily, at 11:15. Professor Marvin.

Chemical Journal Meeting, Thursday, at 5:30.

Thesis.

And one of the following: (1) Mining Engineering II. (2) Mineralogy III and Geology IV, The College. (3) Mechanical Engineering V. (4) Chemistry IX, The College. (5) Chemistry X, The College. (6) Chemistry XVII, The College. (7) Chemistry XVIII, The College.

Equipment.

The Library.—The scientific portion of the University library directly related to engineering contains about 10,000 volumes, while in the reading-room are found 285 American and foreign engineering and scientific journals.

Engineer's Instruments.—These comprise transits, levels, compasses, solar attachments, rods, chains, tapes, plane tables, heliotropes, current meter, aneroids, and other minor instruments. Among the above are a precise level for very accurate leveling, a secondary triangulation transit for topographical work, and an alt-azimuth instrument for use on primary triangulations, which has a ten-inch circle, read to single seconds of arc.

For the summer work in surveying a complete camping outfit is provided. Planimeters, Thatcher and Manheim slide rules and Colby's stadia slide rule are used for rapid calculation and estimation of quantities.

Drawing-rooms.—These are well lighted and provided with tables. They are furnished with many photographs of actual constructions and the cases contain large numbers of blue-prints of working-drawings for bridges, railways, sewers, machinery, etc.

Laboratories.

The School of Engineering is well equipped with apparatus of modern pattern from the best makers.

Physical Geology and Mining.—The department of physical geology and mining possesses a large collection of minerals and samples of rocks which are of economic value, and the necessary apparatus for their examination and identification.

The ore-dressing laboratory, located in the west basement of the Chemistry Building, contains stamps, jigs, crushers, screens (power and hand), hydraulic classifiers, spitz kasten and spitz lutte, an automatic ore-feeder, a slime table, a pulverizer, besides facilities for panning, vanning and sampling ores. It affords opportunities for practical training in making laboratory and field tests on ores. This work is supplemented by the mining museum, which contains a collection of implements and apparatus used in mining and milling operations, as well as models illustrating methods and processes.

Civil and Municipal Engineering.—In the testing laboratories are found an Olsen universal machine of 100,000 pounds capacity, a 50,000-pound torsion machine of the same make, a 50,000-pound

transverse machine, which has been built in the Fowler shops, a standard rattler for the testing of paving brick, together with scales, tools and appliances for making accurate tests of all kinds of materials. One room is devoted to the testing of hydraulic cements, and is equipped with an Olsen machine of 2000 pounds capacity, and an automatic shot machine of 1000 pounds capacity, convenient tables and racks, and a fair amount of accessory apparatus.

The hydraulic laboratory contains a measuring pit, a large steel orifice tank for experimentation with jets, a triplex power pump, a centrifugal pump, pipe-lines, weir-boxes, gauges, etc., arranged to illustrate the laws of fluid motion and affording some opportunity for testing hydraulic machinery.

Mechanical Engineering.—For mechanical engineering, space is allotted in the two laboratory rooms in the east end of the Fowler shops for experimental work, including calibration of engineering instruments, some of the minor experiments on steam and dynamometer testing. In this room there are installed complete Westinghouse and New York air-brake equipments, which serve to illustrate the use of the air-brake in train service and to provide a supply of compressed air for experimental purposes and for operating compressed-air-driven tools and appliances. A six-horse-power Foos gasoline engine is arranged for complete tests, using either gas or gasoline. Arrangements are provided for measuring the fuel, water and air supply, and the heat given to jacket, water, and exhaust. An adjustable fan blower is used as a constant load for testing.

In the west end of Fowler Shops, in close connection with the large battery of boilers, space is provided for steam-engineering work. Here is a special boiler suited to testing purposes. Two small engines are used for engine experiments, and pumps, injectors, gauges, calorimeters, separators, pyrometers, flue gas apparatus, and other accessories are provided. Arrangements are provided for making tests of various makes of injectors and separators.

During the past year donations have been received of a large Tobey natural-gas meter from the Metric Metal Company, a Milwaukee separator from the Steam Appliance Company, and valuable sets of blue-prints from the B. F. Sturtevant Company, the Watertown Engine Company, and the Ball Engine Company.

Electrical Engineering. The dynamo laboratory equipment consists of two D. C. Crocker Wheeler 3-horse-power motors, provided with separate shunt and series field spools, two general electric double-current generators, $7\frac{1}{2}$ K. W., tapped on the alternating current end for two-phase, three-phase or single-phase current at sixty cycles, a general electric special laboratory machine, rated $7\frac{1}{2}$ K. W., consisting of a stationary armature, wound six-phase, and

provided with a revolving field and three different types of induction motor rotors. There is also a Westinghouse, 2-horse-power three-phase motor, Fort Wayne self-starting synchronous motor, and a number of small D. C. motors.

The machinery of the laboratory is run from a line-shaft by a 15-horse-power Siemens and Halske motor. The laboratory is provided with a good assortment of Weston, Whitney, and Thompson, Volt, Amphere and Watt meters, and auxiliary apparatus, such as resistances, reactances, transformers, etc.

Chemical Engineering. The chemical laboratory contains separate rooms for general chemistry, qualitative analysis, quantitative analysis, physical chemistry, and assaying. There are abundant specimens and samples of chemical products to use for illustration. On physical chemistry especially the instruments for electrical measurements are of the newest designs and greatest accuracy. The department also has a liquid air machine, so that experiments can be carried on at low temperatures. The assay-room is provided with the usual furnaces, muffles, etc., for the complete assay of metallurgical products.

The Fowler Shops. This building contains in the boiler-room two Erie City return-flue, 16'x66" high-pressure boilers, also the present equipment of the experimental steam-engineering laboratory described above. Adjoining is the engine-room, in which is a Russell four-valve, medium-speed engine of 150 horse-power, and also a 75 horse-power Ball high speed self-oiling engine. Both these engines are fitted with indicator connections and reducing gears. These two couple conjointly or independently on a short main-line shaft, from which are run the various power and lighting generators. These at present consist of one 1000-volt 60 K. W. General Electric alternator; one 65 K. W. Siemens & Halske D. C. 125 volts; one 17½ K. W. General Electric D. C. 125 volts; one T. H. 50-light arc. Some sixteen independent circuits run from a central switch-board to various buildings and laboratories of the University, so that varieties of currents are always available. In the engine-room is also a Cookson feed-water heater, Cochran separators for each engine, and a Lyman exhaust head. Here, also, are installed a duplex 18" x 12" x 10" steam fire-pump, and a 7½" x 5" x 8" steam service pump for the water-supply of the University, and an exhaust steam-heating equipment for heating the building. The forge and foundry room, 50' x 40', contains twelve Sturtevant down-draft forges, with anvils and all usual smithing tools; there is also provided one large forge for heavier work. The brass foundry is partially equipped.

The metal-working room, which is 80' x 50', has 160 feet of benches, with twenty vises and usual bench tools. There are, at present, ten

14" x 6' Standard engine-lathes; one 18" x 12' Challenge engine-lathe, with all attachments; one crank shaper; one 25" Challenge drill-press, with back gear and self feed; one universal cutter and reamer grinder; one 20" drill-press, with hand feed; one 1½" bolt-cutter; one universal milling-machine, with spiral gear-cutter, and vertical and all other attachments—all the above made by the American Tool Works Company, Cincinnati, Ohio. Also, one 26" x 26" x 7' Gray planer; two 16" x 6' engine-lathes; one 18" x 8' boring lathe; and two 20" drill-presses, with power-feed. There are also power hack saws, grinders, grindstones, etc., usually found in well-equipped shops. The line shafting is divided independently into three sections by friction clutch couplings, and is run by a Westinghouse four-pole, 15 horse-power motor. The tool-room, under care of an attendant, is well furnished with small tools and supplies, which are delivered to students on the check system. This room also contains a 14" x 5' Challenge engine-lathe with draw-bar chucks, and a power drill, both made by the American Tool Works, a Yankee drill-grinder, all run by an electric motor. Two 14" x 6' engine-lathes, American Tool Works Company design, are being constructed by students as regular course work, and as additions to equipment. An electric freight elevator connects with the wood-working room above. In this latter room, 80' x 50', there are at present 100 feet of wood benches with small tools; one 12' speed lathe of 6' bed; one 18" x 12' pattern-maker's lathe, with iron shears and traveling slide rest and cross-feed; also floor stand and rear face plate; one scroll-saw; one combination cross-cut and rip-saw with jointer head and boring attachment; one miter saw and universal trimmer. Six double benches with tail vises and stops, and full set each of pattern-making tools; six Richardson iron body 28-inch speed lathes, with full set of tools. The shafting is run by electric motor. Opening from this is a wash-room, 40' x 20', with stone floor and 200 lockers. In the various benches are also 167 drawers reserved with the lockers for the students' use. On this floor is also the dynamo laboratory, 40' x 50'. In this, at present, is a central line shaft, operated at constant speed by a Siemens & Halske 15-horse-power motor. Split wood pulleys of assorted diameters allow a great range of speed for motors and generators used for experimental study. Two standard Crocker & Wheeler 2½ K. W., D. C. machines, with removal coils for shunt, series and compound winding, serve for D. C. experiments. There are also a 2½ K. W., single-phase, rotary transformer; one 3½ K. W., two-phase generator; and one 4½ K. W., 125 V., compound multipolar, D. C. generators; one 2 K. W., three-phase Westinghouse induction motor; one 7½ K. W., one-, two-, three-phase G. E. rotary converter; several 1000-volt transformers of various types.

Courses of Instruction.

All courses that are given in the first half of any term are indicated by (*a*); those occurring in the second half of any term by (*b*).

CHEMISTRY.

Professor BAILEY.

Associate Professor BARTOW.

Assistant Professor CADY.

Assistant Professor MCFARLAND.

Mr. GUSTAFSON.

Mr. MCCOLLUM.

II.—ADVANCED INORGANIC CHEMISTRY. Lectures, recitations, and laboratory work. Ostwald's Elements of General Chemistry, translated by Alexander Findlay. Must be preceded by course I or equivalent. Required in Engineering School, Sophomore. 1st term, daily, 8 to 10. Mr. Cady and Mr. Gustafson.

III.—QUALITATIVE ANALYSIS. Lectures and laboratory work. Bailey and Cady's Guide to the Study of Qualitative Analysis. Must be preceded by course II. Required in the Engineering School, Sophomore. 2d term, daily, 8 to 10. Mr. Cady and Mr. Gustafson.

VII.—QUANTITATIVE ANALYSIS. Lectures and laboratory work. Newth's Quantitative Analysis. Must be preceded by course III. Required of chemical and mining engineers. 1st term, daily, 1:30 to 3:30, or 3:30 to 5:30. Professor Bailey; or 2d term, daily, 8 to 10. Professor Bartow.

XI.—ASSAYING. This is a course in the volumetric analysis of the ores of copper, iron, zinc, manganese, etc., followed by the analysis of bullion. During the last half of the term the time will be occupied with the fire assay of the ores of gold, silver, and lead. Lectures and laboratory work. Furman's Manual of Practical Assaying. Must be preceded by course VII and mineralogy I. Required of chemical and mining engineers, Junior. 2d term, daily, 8 to 10, and by appointment. Professor Bartow and Mr. McFarland.

XII.—ORGANIC CHEMISTRY. A study of the hydrocarbons and their derivatives. Lectures, recitations, and laboratory work. Must

be preceded by course I. Required of chemical engineers, Junior. 2d term, daily, 3:30 to 5:30. Professor Bartow and assistants.

XV.—METALLURGY. This course includes a study of the metallurgy of lead, copper, zinc, and tin, and general metallurgy, followed by a study of iron, including the ores, methods of manufacture of pig iron, wrought iron, steels, also of the Bessemer and open-hearth processes, and the composition of slags, fluxes, and furnace gases. Must be preceded by course II. Required of chemical engineers and mechanical engineers, Senior. Optional for mining engineers, Senior. 2d term, daily, at 8. Mr. McFarland.

XVI.—PHYSICAL CHEMISTRY. A general course in theoretical and physical chemistry. Lectures and laboratory work. Must be preceded by chemistry VII, or by chemistry II and physics IV and V and mathematics V. Required of chemical engineers and electrical engineers. Optional for mining engineers. 1st term, daily, at 10:15. Mr. Cady.

Other courses in chemistry (The College) are open as optionals to chemical engineers.

(Students entering without chemistry may make good their deficiency by taking chemistry I in The College.)

CIVIL ENGINEERING.

Professor MARVIN.

Assistant Professor HOAD.

Assistant Professor TAYLOR.

I.—TOPOGRAPHICAL DRAWING. A study of and practice in the conventional methods of representing topography, coupled with the platting of the results of field-practice in connection with surveying. Required of Sophomore civil and mining engineering students. 2d term, Tuesday, Thursday and Friday, 1:30 to 3:30. Mr. Taylor.

II.—RAILWAY DRAWING. Railway plats, profiles and plans for track and small structures. Lectures and drawing-room practice in tracing and blue-printing and in platting the results of field-work. Required of civil engineering students. Junior, 1st term, Tuesday, Thursday and Friday, 1:30 to 3:30. Mr. Hoad.

III.—GRAPHICAL STATICS. The properties of equilibrium polygons and other methods of representing the action of forces with application to the determination of stresses in beams, roof trusses, and stone arches. Lectures and drawing. Required of civil engineering students. Junior, 2d term, Tuesday, Thursday, and Friday, 1:30 to 3:30. Mr. Hoad.

IV.—CONTRACTS AND SPECIFICATIONS. An elementary course on the law of contracts, with special reference to engineering practice.

The technical features of specifications. Methods of procedure in letting and conducting contract work, and the engineer's relation thereto. Required of all engineering students. Senior, 2d term, (*b*), daily, at 11:15. Professor Marvin.

V.—SURVEYING. Engineer's instruments, their construction and adjustment. Methods of making and platting land, topographic, mining and hydrographic surveys. Sources of error and the means of controlling the precision of field work. Leveling and earthwork. Required of civil and mining engineering students. Sophomore, 2d term, daily recitations at 10:15, with one half-day per week in field-practice. Mr. Hoad.

VI.—SUMMER FIELD-WORK. Courses in practical surveying. The character of the work done will vary somewhat from year to year, depending upon the make-up of the body of students that go into camp. Small parties of three or four each are formed, and some of these are engaged in making topographical surveys of tracts of about one square mile each, laying out triangles and reading angles, leveling between stations, running stadia traverses, platting results, and drawing a contour map. Other parties may be engaged in laying out a short line of railway, in running precise levels, making a hydrographic survey, or gauging the flow of the Kansas river. All parties camp together. Required of Sophomore civil and mining engineering students and Junior civil engineering students. Ten hours per day for one month, at the close of the college year, in June. Mr. Hoad and Mr. Taylor.

VII.—HYDRAULIC CEMENTS. A laboratory course in testing hydraulic cements and making comparison of their qualities. Reading, experimental work, and reports of tests made. Required of civil engineering students. Senior, 2d term, Tuesday and Thursday, from 3:30 to 5:30. Mr. Taylor.

VIII.—MASONRY. Character of materials composing masonry. Methods of cutting and dressing stone. Foundations: Cribwork, coffer-dams, caissons, piles and pile-driving, concrete, pneumatic processes, etc. Masonry structures: Culverts, arches, piers, abutments, bridges, etc.; their form, construction, strength, and cost. Compound arches of concrete and metal. Recitations and lectures. Required of civil engineering students. Senior, 1st term, (*b*), daily, at 9. Mr. Taylor.

IX.—ROADS AND PAVEMENTS. A study of the materials for and methods used in the construction and improvement of country roads and city pavements. Earthwork, drainage, the road foundation, the wearing surface, etc. Principles governing the location of roads. The economic importance of the "good-roads movement." Re-

quired of civil engineering students. Junior, last two-fifths of the 2d term, daily, at 9. Mr. Hoad.

X.—RAILWAY LOCATION. The principles involved in an economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue from traffic, the bonded debt and the corresponding fixed charges for interest, the operating expense, and the dividend-paying capacity of the road. Methods of conducting field-work for preliminary and location surveys. Required of civil engineering students. Junior, first three-fifths of the 2d term, daily, at 9. Mr. Hoad.

XI.—RAILWAY SURVEYING. A study of the methods of laying out and constructing railways. The setting out of simple and compound curves and calculation of excavation and embankment. Yards, turn-outs, and switches. Easement curves of various types. Calculation of waterways, and methods of staking out foundations for culverts and bridges. This course must be preceded by a general course in surveying. Optional for Senior mining engineers. Required of civil engineering students. Junior, 1st term, daily recitations, at 10:15, with field-practice one-half day per week. Mr. Hoad.

XII.—SANITARY ENGINEERING. The collection, removal and disposal of sewage by various methods. Water-carriage and pneumatic systems. Separate and combined systems. The construction of sewers, outfalls, manholes, and flushing appliances. Ventilation of sewers. Treatment of sewage. The collection and disposal of garbage and other refuse. Garbage destruction and utilization. Street-cleaning. Required of civil engineering students. Senior, 1st term, (a), daily, at 11:15. Mr. Hoad.

XIII.—SANITARY ENGINEERING. Water-supply. The requisites of a supply as to quality and quantity. The value of chemical and biological analyses and the interpretation of results. Relation of water-supply to the public health. Rainfall and the gathering and storage of surface-water. The collection of ground-water. The use of rivers and lakes as sources of supply. Distributing systems; conduits and pipe-lines, pumping machinery, the flow of water in open channels and closed conduits. The construction of dams and reservoirs. The purification of water. Methods of maintaining the efficiency of existing plants. Required of civil engineering students. Senior, 2d term, (a), daily, at 11:15. Mr. Hoad.

XIV.—ROOFS AND BRIDGES. Analytical and graphical calculation of stresses in framed structures under various forms of loading. This course must be preceded by course II in mechanics. Required of civil and mechanical engineering students. Senior, 1st term, daily recitations and drawing, 1:30 to 3:30. Professor Marvin.

XV.—BRIDGE DESIGNING. A study of bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course XIV. Required of civil engineering students. Senior, 2d term, daily recitations and drawing, 1:30 to 3:30. Professor Marvin.

ELECTRICAL ENGINEERING.

Professor BLAKE.

Assistant Professor RICE.

Assistant Professor FREEMAN.

Mr. WARD.

Courses I to VIII, inclusive, XII and XIII are required of electrical engineering students. Courses XIII and XIV are required of mechanical engineering students. Courses IX to XI, inclusive, are optionals for electrical engineering students.

I.—THEORY OF ELECTRICITY AND MAGNETISM. A mathematical treatment of the general principles involved in direct-current devices and introductory to their application in direct-current machinery. Junior, 1st term, daily, at 10:15. Professor Blake.

II.—THEORY OF ALTERNATING CURRENTS. A mathematical treatment of the general principles involved in alternate current phenomena and introductory to their application in polyphasal machinery. Junior, 2d term, daily, at 9. Professor Blake.

III.—DYNAMO MACHINERY. Theory and fundamental types of direct-current generators and motors. Junior, 2d term, three days a week, at 8. Mr. Rice.

IV.—DYNAMO MACHINERY. Theory and general types of alternating-current generators and motors. Senior, 1st term, daily, at 1:30. Mr. Freeman.

V.—DYNAMO DESIGN. Practical calculations and details of construction, together with working-drawings for selected types of generators and motors. In addition to general classroom work, each student will prepare one or more special designs, which may afterward be constructed in the shops. Senior, 1st term, daily, 9 to 11:15. Mr. Freeman.

VI.—ELECTRICAL LABORATORY. Junior, 1st term, two afternoons a week, 2:30 to 5:30. Mr. Rice.

VII.—ELECTRICAL LABORATORY. A continuation of course VI. Junior, 2d term, one afternoon a week, 1:30 to 5:30. Mr. Rice.

VIII.—ELECTRICAL LABORATORY. Senior, 1st term, six hours a week. Mr. Freeman.

IX.—ELECTRIC LIGHTING. Senior, 2d term, daily, (a), at 11:15. Mr. Freeman.

X.—ELECTRIC POWER TRANSMISSION. Senior, 2d term, (b), daily, at 11:15. Mr. Freeman.

XI.—AMERICAN TELEPHONE PRACTICE. Senior, 2d term, (a), daily, at 9. Mr. Freeman.

XII.—MECHANICAL METHODS AND PRACTICE. Lectures and notes on points of modern practice in connection with the use of tools; setting, adjustment and care of machines; shafting and belting, valve-setting, etc. Junior or Senior, 2d term, (a), daily, at 9. Mr. Ward.

XIII.—PROFESSIONAL THESIS. Senior, 2d term, two afternoons a week, 2:30 to 5:30. Mr. Freeman.

XIV.—DYNAMO MACHINERY. A briefer course than III or IV, covering both direct- and alternating-current machines. Must be preceded by physics IV and V and calculus. Junior, 1st term, daily, at 10:15. Mr. Rice.

XV.—ELECTRO-TECHNICAL LITERATURE. Senior, 2d term, (b), daily, at 9. Mr. Freeman.

ENGLISH LANGUAGE AND RHETORIC.

Assistant Professor **RAYMOND.**

Assistant Professor **LYNN.**

Assistant Professor **BRYANT.**

Miss **GARDNER.**

Miss **McKNIGHT.**

I.—RHETORIC AND ENGLISH COMPOSITION. Outlines of rhetoric, with exercises and themes. Required of all Freshmen. 1st or 2d term, daily: 1st term, at 8, 9, 4:30, and at other hours to be arranged; 2d term, at 8, 9, 3:30, and at other hours to be arranged. Miss Lynn.

II.—ADVANCED ENGLISH COMPOSITION. Study of the forms of discourse, and of their practical or technical application in engineering work, with exercises. Required of Juniors or Seniors in the School of Engineering. 1st term: Lectures Tuesday and Thursday, at 8; conferences Wednesday and Friday, at 8. Mr. Raymond.

FRENCH.

Assistant Professor **LINCOLN.**

IX.—SCIENTIFIC FRENCH. Introduction to the vocabulary and styles of works on the mathematical, physical and biological sciences. Required of all engineering students. Freshman. 1st term, daily, at 11:15. Mr. Lincoln.

(Students entering without French make good their deficiency by taking French I and II, as outlined under The College.)

GERMAN.

Assistant Professor ENGEL.

III.—SCIENTIFIC GERMAN. Gore's Scientific Reader; Monographs. Required of all Freshman engineering students. 2d term, daily, at 8. Mr. Engel.

(Students entering without German make good their deficiency by taking German I and II, as outlined under The College, provided they have the Latin entrance requirements.)

GEOLOGY.

Professor HAWORTH.

I.—ELEMENTS OF PHYSICAL GEOLOGY. A study of the elementary principles of general geology, including physical conditions throughout geologic time and the formation of continents; nature and origin of the different kinds of rocks and the rock-forming materials; the destructive process of erosion or denudation, and the economic products obtained from the ground by the various mining operations. Required of Junior civil and Sophomore mining engineers. 1st term, lectures daily, at 3:30. Professor Haworth.

III.—ECONOMIC GEOLOGY. A general study of the metallic and non-metallic products of the mine, quarry, and well, considered from a scientific and a practical standpoint, including the nature, origin, amount and geographic and geologic distribution of the same. Must be preceded by course I, or mineralogy I. Required of Junior mining engineers. 1st term, lectures and library work, daily, at 9. Professor Haworth.

Other courses in geology (The College) are open as optionals to engineering students. For details see the Engineering Courses.

MATHEMATICS.

Professor MILLER.

Associate Professor NEWSON.

Assistant Professor VAN DER VRIES.

Assistant Professor ASHTON.

Mr. ———.

I.—(a) ALGEBRA. Series, binomial theorem, logarithms, determinants. Wentworth's College Algebra, revised. 1st half-term. (b) PLANE TRIGONOMETRY, Miller's Trigonometry. 2d half-term. Both terms. 1st term at 8, 10:15, or 3:30; 2d term at 8 or 9. Mr. Van der Vries and assistant. This course is required of all Freshmen in the School of Engineering.

II.—ANALYTIC GEOMETRY. Elements of plane analytics, including the geometry of the conic sections, and an introduction to solid

analytics. Tanner and Allen's Analytic Geometry or Ashton's Analytic Geometry. Required of all Freshmen in the School of Engineering. Must be preceded by course II. Both terms. 1st term at 8 and 4:30; 2d term at 10:15 or 1:30. Professor Newson, Mr. Van der Vries, and Mr. Ashton.

V.—DIFFERENTIAL AND INTEGRAL CALCULUS. Fundamental principles and general methods, with some applications to problems arising in mathematics and mathematical physics. Osborne's Calculus. Required of all Sophomores in the School of Engineering. Must be preceded by Course IV. Both terms. 1st term at 9 or 10:15; 2d term at 8 and 9. Professor Miller, Professor Newson, and Mr. Van der Vries.

VI.—DIFFERENTIAL EQUATIONS. An introductory course into the methods of solving differential equations. Required of all students in electrical engineering. Must be preceded by courses IV and V. 1st term, at 9. Professor Miller.

Other courses in mathematics or astronomy (The College) are open as optionals to Senior civil and electrical engineers. (See engineering courses.)

MECHANICS.

Professor MARVIN.

Assistant Professor HOOD.

Assistant Professor TAYLOR.

I.—MECHANICS. A study of the laws of statics and dynamics. Action of forces upon bodies and the resulting motions. Required of all engineering students. Senior for mining engineers, Junior for all others. 1st term, daily, at 11:15. Professor Marvin.

II.—STRENGTH OF MATERIALS. The theory of resistance to stress and applications to engineering construction. Required of all engineering students. Senior for mining engineers, Junior for all others. 2d term, four hours per week, at 10:15. Professor Marvin.

III.—TESTING OF MATERIALS. A laboratory course to accompany course II. The testing of iron, steel, wood and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. Four hours a week, for all engineering students, 2d term. Senior for mining engineers, Junior for all others. Tuesday, Thursday, or Saturday. Mr. Hood.

IV.—HYDRAULICS. A study of the laws governing the pressure and flow of liquids and gases and the force of and resistance to their motion. Required of civil and mechanical and optional for mining engineering students. Senior, 1st term, (*a*), four hours a week, at 10:15. Mr. Taylor.

V.—HYDRAULIC LABORATORY. A course to accompany course IV and the course in hydraulic machinery. Experimental work with the flow of water over weirs, through orifices and pipes, and in testing hydraulic machinery. Required of civil and mechanical and optional for mining engineering students. Senior, 1st term, two hours a week. Tuesday, Thursday, or Friday. Mr. Taylor.

MECHANICAL DRAWING.

Assistant Professor HOOD.

Assistant Professor TAYLOR.

I.—FREE-HAND DRAWING. Outline drawing with lead-pencil. Drawing of simple geometrical figures for hand and eye training. Drawing from the object, teaching accuracy in observation. Required of all engineering students. Freshman, 1st six weeks of 1st term, two hours, three times a week. Mr. Hood.

II.—ELEMENTARY MECHANICAL DRAWING. Accurate drawing of geometrical figures, teaching proper use of instruments. Drawing-board constructions for conic sections and other plane curves. Standard forms of lettering for titles. Continual practice in single-stroke free-hand lettering for notes on drawings. Required of all engineering students. Freshman, last fourteen weeks of 1st term, two hours, three times a week. Mr. Hood.

III.—DESCRIPTIVE GEOMETRY. Church's Descriptive Geometry. Execution of a number of original exercises. Required of all engineering students. Freshman, 2d term, daily, at 8, 9, or 4:30. Mr. Hood and assistants. Also given in the 1st term, daily, at 8. Mr. Taylor.

IV.—PROJECTION DRAWING. Construction of problems in projection, sections, intersection of surfaces, development of surfaces, isometric drawing. Dimensioning of drawings with special reference to methods used in practice. Parallel with course III. Required of all engineering students. Freshman, 2d term, two hours, three times a week. Mr. Hood and assistants.

V.—SHADES, SHADOWS, AND PERSPECTIVE. Construction and rendering of drawings in projection, showing shades and shadows. Elements of perspective. Construction of perspective drawings from given dimensions. Required of civil engineering students. Sophomore, 1st term, six hours per week. Mr. Taylor.

VI.—MACHINE DRAWING. Free-hand working sketches from machine parts and assembled machines; working-drawings from these sketches in accordance with approved practice. Detailing from assembled drawings. Tracing and blue-printing. Lectures on draft-

ing-room methods. Required of electrical, mechanical, mining and chemical engineering students. Sophomore, 1st term, two hours, three times a week. Mr. Hood.

MECHANICAL ENGINEERING.

Associate Professor DIEMER.

Assistant Professor HOOD.

All courses are required of mechanical engineering students. Courses I to III, V, VI and XV are required of electrical engineering students. Course V is required of civil and mining engineering students.

I.—MACHINE DESIGNING. Elements of machine designing. Designing of machine details. Designing of simple machines involving the relating and proportioning of parts. To be taken only with course II. Sophomore, 2d term, Monday, Wednesday, and Friday, 3:30 to 5:30. Mr. Hood.

II.—MACHINE DESIGN. Lectures and notes. Rules, formulæ and data for the design of machine elements. Proportioning of machine parts in accordance with approved practice. Problem work to be carried out in course I. Text, Jones's Machine Design. Sophomore, 2d term, Tuesday and Thursday, at 10:15. Mr. Hood.

III.—PRINCIPLES OF MECHANISM. The kinematics of machinery. Lectures, recitations, and graphical problems. Le Conte's Mechanics of Machinery, Prerequisites, Descriptive and Analytic Geometry. Sophomore, 2d term, Monday, Wednesday, and Friday, at 10:15. Professor Diemer.

V.—ENGINES AND BOILERS. Types of engines; valve motions; governors; dynamics of moving parts; indicator and cylinder analysis; accessories and connections. Boilers—general construction, care, and management; accessory apparatus; fuels. Lectures, recitations, and five half days in the engineering laboratory. Text, Ripper's Steam-engine Theory and Practice. One day per week devoted to discussion of current types, with required descriptive text. Must be preceded by Physics I and II. Junior, 2d term, daily, at 11:15. Professor Diemer.

X.—HYDRAULIC MACHINERY. Study of hydraulic engines, water-wheels, turbines, and impulse wheels, pumps and rams, elevator machinery, and special applications of hydraulic power. Senior, 1st term (*b*), four times a week, at 10:15. Text, Barr's Pumping Machinery. Professor Diemer.

XI.—FACTORY ECONOMICS. Factory, design, equipment, and organization. Selection and arrangement of machinery for given con-

ditions. Shop plans. Study of organization and management of industrial establishments. Lectures, collateral reading, preparation of written discussions and plans. Senior, 2d term, (a), daily, at 9. Professor Diemer.

XII.—HEATING SYSTEMS. Principles of heating and ventilation. Study of plans for heating and ventilating buildings. Selection and operation of machinery for the purpose. Text, Carpenter's Heating and Ventilating. Junior, 2d term, (b), daily, at 9. Professor Diemer.

XIII.—THESIS WORK. Each candidate for graduation will carry out systematic original work, either in experimentation or engineering designing. Senior, four hours, once a week, throughout the year.

XIV.—ENGINEERING LABORATORY. Measurement of engine clearance, valve-setting, determination of mechanical efficiency and steam consumption of engines at various loads; calorimetry and separator tests; boiler tests; thermodynamic analysis of indicator diagrams and transfer of same to entropy chart. Juniors in mechanical engineering taking this course will omit exercises requiring the use of thermodynamics. Junior mechanical, and Senior electrical, 1st term, four hours a week, Tuesday or Thursday afternoons. Professor Diemer.

XV.—ADVANCED ENGINEERING LABORATORY. Thermal analysis of gas-engines and air-compressors, coal, calorimetry, flue-gas analysis, and complete analysis of power-plant efficiency, with a view to fuel economy and smoke prevention. Senior, 2d term, four hours a week, Tuesday or Thursday afternoon. Professor Diemer.

IV.—BOILER DESIGN. Design of a horizontal multitubular boiler and setting. Preparation of bill of material. Lectures, recitations, and drafting. Text, Peabody and Miller's Steam-boilers. Junior, 1st term, Mondays and Wednesdays, 2:30 to 5:30. Professor Diemer.

VI.—THERMODYNAMICS. Study of the relations of heat phenomena. Theory of gases and vapors. Theory of heat engines and discussion of heat efficiencies. Must be preceded by physics I and II and calculus. Lectures, recitations, and problems. Texts, Reeves's Thermodynamics, and Spangler's Notes on Thermodynamics. Senior, 1st term, four days a week, at 11:15. Professor Diemer.

VII.—ENGINE GRAPHICS. Dynamics and design of a high-speed steam-engine. Graphical solution. Text, Peabody's Valve Gears. Junior, 2d term, Mondays, 2:30 to 5:30. Professor Diemer.

VIII.—ENGINE DESIGN. Making working-drawings for a high-speed steam-engine. Text, Whitham's Steam-engine design. Senior, 1st term, Mondays and Wednesdays, 3:30 to 5:30. Professor Diemer.

IX.—ADVANCED MACHINE DESIGN. Advanced study of kinematics of machinery; mechanical power-transmission systems; design of complete machine tools, hoisting apparatus, or other form of machines. Senior, 2d term, Mondays and Wednesdays, 3:30 to 5:30. Professor Diemer.

MINING ENGINEERING.

Professor HAWORTH.

Assistant Professor CRANE.

COURSES FOR UNDERGRADUATES ONLY.

I.—MINING. (a) *Excavating, Boring, Blasting, and Surveying*. Excavation: Excavation of various kinds of earth, such as soils, clays, sands, and rocks, with or without ground-water; quarrying stone, etc., with various kinds of tools and machinery employed for same. Boring: Methods and appliances for prospect drilling and for drilling oil-wells and gas-wells, including different varieties of tools and machinery employed, difficulties to be encountered, and conditions under which prospect boring or drilling is profitable. Blasting: A study of the various kinds of explosives used in mining and excavating, such as black powder and the various kinds of the nitroglycerines and other explosives, including their manufacture and modes of use, and precautions necessary in handling them. Mine surveying: General principles of underground surveying and relation between underground and surface surveys, the construction of mine maps and mine sections, and measurements required in connection with contracts and location of new works. To be supplemented by field-work during summer vacation.

(b) *Shafting, Tunneling, and Mine Support*. Shafting: Shaft sinking; methods employed in sinking shafts through soft and hard materials, dry or water-bearing, including the hoisting and handling of excavated material, and methods of shaft-timbering and shaft-lining. Tunneling: Methods of driving tunnels through different kinds of earth and rock, including drainage and ventilation, tunnel supports and linings, and methods of choosing locations for tunnels. Mine supports: Including a general study of the various methods of supporting all forms of underground openings by timbers, masonry, metallic linings, and other methods peculiarly adaptable to special conditions. Required of mining engineering students. Juniors, 1st term, daily, by appointment. Mr. Crane.

II.—ORE DRESSING. General methods and theories for separating different ores from foreign materials and for washing coal, clays, and other products. It includes a study of hand dressing, crushing, screening, and jigging, and a study of the machinery for the same; the concentration of slimes; milling methods for gold and silver ores.

Lectures and laboratory work. Required of mining engineering students. Junior, 2d term, daily, by appointment. Mr. Crane.

III.—MINE ENGINEERING AND MINE PLANT. (a) *Mine Engineering—Extraction, Drainage, and Ventilation.* Extraction: Machinery and methods used in handling minerals on the surface and under ground; tramways, cars, propelling forces; methods of loading and unloading cars; methods of storing mine products. Drainage: Sources, amount and character of mine waters, and methods of controlling the same; mine drainage by natural and artificial methods; water-supply; inundations, and modes of escape from inundated mines. Ventilation: Air of mines; underground gases and gases produced by blasting and other mining operations; methods of ventilation; mine explosions of fire-damp and dust; mine fires; relief and rescue in case of accident.

(b) *Mine Plant.* A study of the various kinds of machinery employed in mine development and mine operation, and methods of placing the same; including machinery required for drilling, blasting, hoisting, drainage, and mine ventilation; and a study of large mining plants in the United States and abroad. Required of mining engineering students. Senior, 1st term, daily, by appointment. Mr. Crane.

IV.—PROSPECTING, EXPLORING, DEVELOPING, AND THE EXPLOITATION OF MINERAL PROPERTIES. A study of the nature and origin of metalliferous deposits and other valuable mining materials; the best methods of prospecting, developing and working the same. Required of mining engineering students. Senior, 2d term, (a), daily. Mr. Crane.

V.—MINE PLANT, MINE CONSTRUCTIONS. (a) *Mine Plant.* Second part of mining III, completed. (b) *Mine Constructions.* Building materials, foundations, mine buildings and constructions, with special reference to mine work. Required of mining engineering students. Senior, 2d term, daily, by appointment. Mr. Crane.

VI.—MINE ADMINISTRATION. Mine accounts and management; care of sick, and injured in case of accident; rules and regulations for equipping expeditions and maintaining camps. Optional for mining engineering students. Senior, 1st term, (a), daily, by appointment. Mr. Crane.

VII.—PROFESSIONAL THESIS. Before graduation a thesis will be required of each student, embodying an elaborate description of some phase of mining or metallurgical processes, or of ore formation, or a description of the mineralogy or geology of some mining locality. It is presumed that material will largely be gathered for thesis work during the summer vacation excursions, but ideal plants may be constructed or mines developed in exceptional cases. The thesis

work will be under the supervision of the department of geology and mining. It should be begun during the first term of the Senior year. A typewritten copy of the thesis must be presented to the head of the department of geology and mining not later than May 15, and must be approved by the head of the department before graduation.

VIII.—SUMMER EXCURSION WORK. During the summer vacation between the Junior and Senior years students will be required to devote about four weeks to a study of some of the more important mining localities of America. Excursions will be made by the students, accompanied by instructors, so that a careful study may be made of the geology and mineralogy of the region, of the mines and mining methods, and of the plants for mining, ore dressing, and smelting. It is expected that this work will be exceedingly beneficial to the student. It will, therefore, be passed upon and graded the same as other studies in the course. Professor Haworth and Mr. Crane.

MINERALOGY.

Professor HAWORTH.

I.—ELEMENTARY MINERALOGY. A brief course in crystallography, blowpipe analysis, and the metalliferous and silicate minerals. In crystallography, considerable work is required in drawing crystal forms and measuring angles of crystal models and natural crystals. In blowpipe analysis, sufficient practice is required to familiarize the student with necessary blowpipe tests for mineral identification; but the general physical properties, as crystalline form, cleavage, gravity, hardness, and color, are emphasized as most important means of identification. Lectures and laboratory work. Required of Sophomore mining and chemical engineers. 2d term, daily, 3:30 to 5:30. Professor Haworth and assistant.

Mineralogy III (The College) is an optional for Senior chemical engineers.

PHYSICS.

Professor BLAKE.

Mr. STIMPSON.

IV.—MECHANICS, SOUND, AND HEAT. A fundamental course of experimental lectures and recitations. Required of all engineering students. 1st term, four days a week, at 11:15. Laboratory two hours a week. Professor Blake and Mr. Stimpson.

Prerequisites: Plane trigonometry and analytical geometry.

V.—ELECTRICITY, MAGNETISM, AND LIGHT. Continuation of physics IV. Required of all engineering students. 2d term, four

days a week, at 11:15. Laboratory two hours a week. Professor Blake and Mr. Stimpson.

Prerequisites: Plane trigonometry, analytics, and calculus.

SHOP WORK.

Mr. WARD.

Mr. HANSON.

Mr. JONES.

Required of electrical and mechanical engineering students and of all other engineering students throughout the Freshman and Sophomore years.

I.—Forging, welding and working iron at proper heat. Making steel tools, and tempering. Freshman, 1st or 2d term, one afternoon a week.

II.—Use of hand wood tools; sharpening; the lathe and pattern turning; pattern-making, core boxes, draft, shrinkage, finish, etc.; selection of woods; exercises and working from special designs. Freshman, 1st or 2d term, one afternoon a week.

III.—Filing, chipping, scraping, drilling, babbitting, and thread-cutting. Sophomore, 1st term, one afternoon a week.

IV.—Lathe work. Turning cylinders, tapers, curves, and cutting threads. Sophomore, 2d term, one afternoon a week.

V.—Lathe work. Turning to close fit; eccentric and special thread-cutting. Junior, 1st term, one afternoon a week.

VI.—Lathe, planer and milling-machine work. Boring, reaming and shaping to special design. Tool-making, hardening and grinding. Junior, 2d term, one afternoon a week,

IV. The School of Law.

Faculty.

FRANK STRONG, Ph. D., President.

JAMES W. GREEN, A. M., Dean. Professor of Law.

WILLIAM L. BURDICK, Ph. D., LL. B., Professor of Law.

WILLIAM E. HIGGINS, B. S., LL. B., Associate Professor of Law.

FREDERICK H. WOOD, A. B., LL. B., Assistant Professor of Law.

Special Lecturers for 1904-'05,

JOHN C. POLLOCK, Judge of the United States District Court, Topeka.

J. G. SLONECKER, United States Referee in Bankruptcy, Topeka.

THOMAS B. WALL, ex-Judge of the District Court, Wichita.

R. F. THOMPSON, ex-Judge of the District Court, Minneapolis.

JOHN D. MILLIKEN, attorney at law, McPherson, "The Fourteenth Amendment to the Constitution of the United States."

THOMAS A. NOFTZGER, State Senator, Anthony.

EDWIN P. GATES, ex-Judge of the Circuit Court, Kansas, City, Mo., "Historical Development of the Code."

CLARENCE S. PALMER, attorney at law, Kansas City, Mo., "Municipal Charters."

EDWARD L. SCARRITT, ex-Judge of the Circuit Court, Kansas City, Mo.

SELDEN P. SPENCER, ex-Judge of the Circuit Court, St. Louis, Mo., "Ethics of the Legal Profession."

JOHN H. ADAMS, St. Louis, Mo., "Practical Fire Insurance."

ROBERT E. BALL, attorney at law, Kansas City, Mo.

Purpose of the School.

It is the aim of the School of Law to give all its students a thorough acquaintance with the general principles of American law; and to furnish a course of legal instruction that shall fit them to practice at the bar of any state of the Union, and to give those who do not expect to become practicing attorneys but who desire to pursue certain legal subjects for their bearing upon business, such instruction as may be best suited to their needs.

Degrees Granted.

The course of study of the School of Law leads to the degree of Bachelor of Laws, (LL. B.)

System of Instruction.

It is believed to be proved by experience that to be thoroughly efficient, instructional training in law courses must be given by resident teachers who give their whole time to instruction. The work of the School of Law is under the direction of four resident instructors, supplemented by lectures on special topics by competent men in the actual practice of law.

Method of Teaching.

There are in general three methods of class instruction in law: By lectures, by text-book, and by cases. The School of Law at the University does not pursue any method to the entire exclusion of the others. It uses the text-book method very largely for the beginning classes, and makes use of the lecture and case methods more largely as classes advance in the course. Experience seems to have shown, however, that students get a clearer and more lasting knowledge of the fundamental principles of law through the study of a text-book and recitations in the class-room, together with a parallel study of cases to illustrate the principles involved.

The student is given large opportunity for free discussion of the topics in question, and is brought as closely as possible into personal touch with his instructor.

Requirements for Admission.

There are two ways of admission to the School of Law of the University: First, by examination; second, by certificate.

By Examination.—Candidates for admission to the junior class of the School of Law who cannot bring certificates are required to be examined in the subjects named below. The times and place of examination are the same as in The College, page 66 of this catalogue.

SUBJECTS FOR EXAMINATION.

1. Physical Geography, one year.
2. History — Greek and Roman, and United States and English, three years.
3. Algebra, through Quadratic Equations, one and one-half years.
4. Geometry, plane, one year.

5. Physics, one year.
6. English, three years.

By Certificate. Nearly all students enter the School of Law by certificates from high schools, academies, or other preparatory schools. The method of accrediting by certificate is the same as that in the College, as noted on page 67.

Work in Preparation for Law.

All persons proposing to enter upon the study of law are earnestly recommended to take first either a regular or special course in the College. A good fundamental education is necessary to a successful study of law. Especially is it necessary now when the practitioner must come into competition with men who have had a thorough university training before they entered upon the study of law.

The College offers special work in subjects of great value as preparatory to law, in English and American Constitutional and Political History, Constitutional Law, Political Science, Economics, Sociology, History of International and Common Law, in Rhetoric and English Composition and Debating. These courses are especially recommended in preparation for law.

The College and the School of Law in Six Years.

A regular course in the College, however, is strongly recommended, and as noted on page 90 of this catalogue, during the junior and senior years of the College, the student may elect one-half year's work from the course in the School of Law. By this arrangement the student, by reasonable extra work, may finish both the College and the School of Law in six years.

Courses in Law in the Summer Session.

Attention is called to the opportunity of shortening the law course by taking such law subjects as are offered in the Summer Session of the University. The Summer Session opens June 9 and closes July 20, 1904.

Admission to Advanced Standing.

Persons who have privately completed a part of the course are admitted to advanced standing in the Junior and Middle classes, on satisfying the faculty as to their qualifications. No one will be so admitted to the Senior class except upon passing a satisfactory examination upon the requirements for admission, and also upon the work prescribed for the Junior and Middle classes.

Certificates of work done in other law schools of recognized standing and equivalent requirements may be received in lieu of examinations for advanced standing.

Length of Law Course.

The complete course includes three years, each of which occupies eight and one-half months (excluding two weeks' recess at Christmas). The first term of the year 1904-'5 will begin on Wednesday, the 7th day of September, 1904.

Examinations.

The members of each class will be examined upon each topic when completed. A final examination will be held at the end of the third year, embracing all the studies of the course. The degree of bachelor of laws will be conferred upon members of the Senior class who complete the course of study according to the requirements.

Thesis.

Each member of the Senior class who is a candidate for a degree is required to prepare and to deposit with the Faculty, at least one month before graduation, a thesis upon some legal topic selected by himself and approved by the Faculty, which thesis shall not be less than forty folios in length. The production must be satisfactory in matter, form, and style, and the student presenting it must hold himself in readiness to be examined upon the subject.

Certificate of Attendance.

If the student does not graduate, he may, on application to the Registrar, receive an official certificate of his attendance and of the work accomplished by him in the school.

Admission to the Bar.

The legislature of 1903 amended the statute regulating admission to the bar, and provided for state examinations by a commission appointed by the supreme court. The board of examiners meets at Topeka on the third Monday in February, June, and October. Applicants for examination and proof of qualifications must be filed with the secretary of the board at least three weeks before the examination. Printed forms of applications may be obtained from the secretary of the board at Lawrence.

Graduates of the University of Kansas, upon presentation of diplomas, are excused from any examination upon preliminary educational qualifications. All others must present affidavits from teachers showing the completion of the following subjects, or pass examinations therein, to wit:

Three years English—grammar, rhetoric, and literature; arithmetic, algebra, geometry; general history, Roman, English and

American history; civil government; the elements of physics, physical geography, botany, biology, political economy, and sociology.

All candidates for admission are required to pass a written examination covering their legal qualifications. All subjects included in this examination are within the course of study of the University School of Law.

Practice Courts.

Systematic work in moot and practice courts is required throughout the course. Weekly sessions of these courts are held.

Junior Year. In the Junior year preliminary instruction is first given in the study of cases, the making of briefs, and the preparation of cases for argument. Following this preliminary instruction, moot court is held under the direction of a member of the faculty. The places of judges, attorneys, clerk and other court officers are filled in rotation by members of the class. Cases involving statements of fact are assigned. Written briefs are required to be prepared, served upon the opposing attorneys, and submitted to a court composed of two members of the class and a member of the faculty. Written opinions containing a full discussion of the legal questions presented are required to be handed down by the student justices.

Middle Year. The aim of the court of the Middle year is to instruct in the preparation of cases before and after they are filed in court. To this end, statements of fact are given to the members of the class, in accordance with which trial briefs of the law and of the facts are made, and pleadings under the code are drawn. Each member of the class receives from the instructor in charge criticism of the work done. The practice in the court follows closely the practice in the district courts of Kansas. Besides this work, a course of lectures is given on instructions to juries and findings of fact. Members of the class are required to draw instructions and findings under the direction of instructor in charge of the course.

Senior Year. The work of this year is partly the continuation of the work of the first two years. In addition, the students are required to prepare all the papers, including a case-made or bill of exception necessary to take a case from the lowest to the highest court. Each successive step is criticized and discussed by a member of the Faculty and made to conform to the practice of actual courts, in the conduct of a case from its inception to determination by the court of last resort. The case to be so taken up must be originated by the student himself, thus affording a test of the knowledge of the jurisdiction both of *nisi prius* and appellate courts with respect to different causes of action.

Expenses.

Each student entering the Law School for the first time is required by law to pay a matriculation fee of five dollars. Each student, in whatever year of the law course he may be, is required by law to pay an incidental fee of twenty-five dollars. Non-residents of Kansas pay a matriculation fee of ten dollars and an incidental fee of fifty dollars. Students of the School of Law may divide the payment of the incidental fee between the two terms of the school year.

Many students reduce their living expenses by doing light house-keeping. Board, room, light and fuel cost from three to five dollars per week. Further information about expenses may be found in connection with The College, page 84 of this catalogue.

Student Organizations.

Cooley Club. Meetings of the club occur once each week. Any student of the School of Law is eligible, but the membership is confined at present mainly to the members of the Junior and Middle classes. Legal questions are debated, and to this is added the work of the ordinary literary debating society.

Kent Club. The members of the Kent club are, in the main, members of the Senior class, although any student in the School of Law is eligible to membership. The work consists of the discussion of legal, economic, and historical questions, and the consideration of legal literature. Debating is a prominent feature of the work of the club.

The Kansas Lawyer.

This is a monthly publication edited by the students of the School of Law. It is devoted to legal literature and to items of interest to the students and alumni of the school.

Honors and Prizes.

By resolution, the State Bar Association of Kansas, as a recognition of the School of Law and for the purpose of encouraging its students to work along the line of legal literature, assigns a place on the literary program of the annual meeting at Topeka to that student of the Senior class who prepares the best paper on some legal topic assigned by the Law Faculty. The merits of the papers submitted are passed upon by a committee appointed for the purpose by the association. Charles Vincent Jones was given the honor in 1903-'04.

The Edward Thompson Company offers annually a prize of a set of the American and English Encyclopedia of Law for the best thesis on a subject assigned by the Law Faculty. The contest is open to all members of the School of Law. Charles Wierenga won this prize in 1903-'04.

Debating.

Interstate debates are held each year with Missouri, Nebraska, and Colorado. Members of the two Law-school clubs are chosen to represent these clubs on the debating squad of the University. This squad receives practical instruction in public speaking and debating from a committee of the general Faculty of the University. Law students are also eligible to membership in the general literary clubs of the University which are also represented in the debating squad. From this squad the debating teams for the interstate debates are chosen by competition.

Equipment.

Law Building. A new building for the School of Law of the University will be erected during the summer of 1904. The building will cost \$50,000, and will be one of the most complete and best-equipped law buildings in the West. It will have three floors, devoted to recitation rooms, offices, library, and rooms for the Law-school clubs. The library will contain space for about 20,000 volumes, and private study rooms for students and Faculty will open into the reading-room of the library. A room will be set aside for a practice court and the best facilities possible will be available for students of the law.

Libraries. The law library is composed of upwards of 3000 volumes, for the exclusive use of the students of the School of Law. The library has an excellent equipment of the best law text-books, and new texts are being added constantly. It has also reports of the courts of last resort, both state and federal, as well as lawyers' reports, annotated, American Decisions, American Reports, and the complete reporter system. Limited space has prevented as rapid growth of the library as desired, and as soon as the new building is completed large additions will be made to the library equipment. In addition to the volumes devoted exclusively to law, the University library of nearly 50,000 volumes is at the disposal of the law students. They thus have at hand the largest and best selected scholarly library in the Southwest. The city library, soon to be housed in the Carnegie building, will also be open to the students of the School of Law for books of fiction and general literature.

State Library. The state library at Topeka, which is largely a law library, is easily accessible to students upon necessary occasions. Such works as may be found usually in large state libraries will therefore be at the disposal of the members of the Law School at various times during the year.

Courses of Study.

JUNIOR YEAR.

First Term (first half):

Elementary Law, Robinson. Daily, at 10:15. Professor Higgins.
 Contracts, Clark. Daily, at 11:15. Professor Green.
 Moot Court. The Study of Cases. Once a week. Hours by appointment. Mr. Wood.

First Term (second half):

Agency, Mechem. Daily, at 9. Professor Higgins.
 Contracts, Clark. Daily, at 11:15. (Continuation of the work of first half-term.) Professor Green.
 Moot Court. Once a week. Mr. Wood.

Second Term (first half):

Torts, Bigelow. Daily, at 9. Mr. Wood.
 Bailments, Schouler. Daily, at 10:15. Mr. Wood.
 Sales, Burdick, and cases. Daily, at 11:15. Professor Burdick.
 Moot Court. Once a week. Mr. Wood.

Second Term (second half):

Damages, ———, Daily, at 10:15. Mr. Wood.
 Domestic Relations, Schouler, and lectures. Daily, at 11:15. Professor Burdick.
 Moot Court. Once a week. Mr. Wood.

MIDDLE YEAR.

First Term (first half):

Insurance, Elliott. Daily, at 9. Professor Higgins.
 Criminal Law, Clark and Marshall, or Bishop. Daily, at 10:15. Professor Burdick.
 Practice Court. Once a week. Professor Higgins.

First Term (second half):

Common-law Pleading, Perry. Daily, at 10:15. Professor Burdick.
 Equity, Eaton. Daily, at 11:15. Professor Burdick.
 Practice Court. Once a week. Professor Higgins.

Second Term (first half):

Code Pleading, Bliss. Daily, at 9. Professor Higgins.
 Equity Pleading, Fletcher. Daily, at 10:15. Professor Burdick.
 Practice Court. Daily, by divisions of the class in connection with Code Pleading, at 11:15, and once a week for the entire class. Professor Higgins.

Second Term (second half):

Bills and Notes, Norton. Daily, at 9. Mr. Wood.

Evidence, Chase's Stephen's Digest. Daily, at 10:15. Professor Green.

Practice Court. Daily, by divisions, and once a week for the entire class. Professor Higgins.

SENIOR YEAR.

First Term (first half):

Real Property, Tiedeman. Daily, at 9. Mr. Wood.

Evidence, Chase's Stephen's Digest. Daily, at 10:15. Professor Green.

Roman Law, Lectures, Justinian Institutes. Daily, at 11:15. Professor Burdick.

Practice Court. Once a week. Professor Burdick.

First Term (second half):

Real Property, Tiedeman. Daily, at 9 (continuation of the work of the first half-term). Mr. Wood.

Corporations, Clark. Daily, at 10:15. Professor Green.

International Law, Lawrence. Daily, at 11:15. Mr. Wood.

Practice Court. Once a week. Professor Burdick.

Second Term (first half):

Constitutional Law, Black. Daily, at 9. Professor Green.

Corporations, Clark. Daily, at 11:15, for four weeks. Professor Green.

Municipal Corporations, ———. Daily, at 11:15, for five weeks. Professor Green.

Practice Court. Once a week. Professor Burdick.

Second Term (second half):

Wills and Administrations, Underhill, first volume. Daily, at 9. Professor Higgins.

Partnership, Parsons. Daily, at 10:15. Professor Higgins.

Constitutional Law, Black. Daily, at 11:15, for four weeks. Professor Green.

Conflict of Laws, Minor, daily, at 11:15 for five weeks. Professor Green.

Practice Court. Once a week. Professor Burdick.

V. The School of Fine Arts.

Faculty.

FRANK STRONG, Ph. D., President.

CHARLES S. SKILTON, A. B., Dean. Professor of History of the Fine Arts, Musical Theory, and Organ.

CARL A. PREYER, Professor of Piano, Musical Theory, Counterpoint, Canon, and Fugue.

CHARLES E. HUBACH, Professor of Voice.

WILLIAM A. GRIFFITH, Professor of Drawing and Painting.

ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

LUCIEN I. BLAKE, Ph. D., Professor of Physics.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

ARVIN S. OLIN, A. M., Professor of Education.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

RAPHAEL D. O'LEARY, A. B., Associate Professor of English.

FRANK E. BRYANT, A. M., Assistant Professor of English.

ELMER F. ENGEL, A. M., Assistant Professor of German.

MARGARET LYNN, A. M., Assistant Professor of English.

ALBERTA L. CORBIN, Ph. D., Assistant Professor of German.

ARCHIBALD HOGG, A. B., Assistant Professor of Philosophy.

EDGAR G. FRAZIER, Ph. B., Assistant Professor of Public Speaking.

MARY C. FISH, Instructor in Physical Education.

HARRIET GREISSINGER, Mus. B., Instructor in Piano.

JEAN BOWERSOCK, Instructor in Violin.

BLANCHE LYONS, Assistant in Voice.

MAUDE B. COOKE, Assistant in Piano.

MAUD MILLER, Mus. B., Assistant in Piano.

JULIA RIGHTER, Mus. B., Assistant in Piano.

LOUISE WIEDEMANN, Mus. B., Assistant in Piano.

Departments.

The School of Fine Arts is made up of the following departments:

1) Music. (2) Drawing and Painting. (3) Elocution.

Degrees.

The courses of study in the School of Fine Arts lead to the following degrees:

Bachelor of Music.

Bachelor of Painting.

Teacher's certificate of completion of two-year course.

Requirements for Admission.

There are two methods of admission to the School of Fine Arts: First, by examination; second, by certificate.

By Examination. All students who cannot present certificates from accredited schools will be examined in the subjects required for entrance. The times and place of examination are set forth on page 66 of this catalogue.

By Certificate. Students will be admitted without examination on certificates from high school or other preparatory school signed by the proper school officer. The general plan is the same as that noted under The College on page 67.

Units Required for Admission.

Eight units of high-school work are required for full admission to the School of Fine Arts. (For information concerning special students see page 216.) The eight units must include the following:

Three units in English from Group I.

Two and one-half units in Mathematics from Group II.

One unit in History from Group VI.

Two units from any courses remaining, as outlined in the following:

SUBJECTS OFFERED.

GROUP I, English.	{ English, three units.	{ All the English units are required.
GROUP II, Mathematics.	{ Algebra, one and one-half units. Plane geometry, one unit. Solid geometry, one-half unit.	{ The algebra, one and one-half units, and plane geometry, one unit, are required.
GROUP III, Foreign Language.	{ Latin, four units. Greek, three units. German, three units. French, three units.	{ All optional, except that students who take German in the University must offer three units of Latin for entrance.

GROUP IV, Physical Sciences.	{ Physical geography, one unit. Physics, one unit. Chemistry, one unit.	{ All optional.
GROUP V, Biological Sciences.	{ Botany, one unit. Zoology, one unit.	{ All optional.
GROUP VI, History.	{ Greek and Roman, one unit. Mediaeval and modern, one unit. English, one unit. American, one unit. Economics, one unit.	{ One unit is required.

Additional Requirements.

In Violin. Applicants must add to the general requirements stated above, an ability to play correctly selections from the Wichtl School, Book I, and from Kayser, Thirty-six Studies, Book I.

In Piano and Organ. In addition to the technical requirements, consisting of the major and the harmonic and melodic minor scales, the triad, dominant seventh and diminished seventh arpeggios, candidates will be required to play in tempo, and with correct touch, fingering, and phrasing, selections from the following: Loeschorn, op. 66; Bach's Easy Preludes; Heller, op. 47, or equivalents; Mozart, Sonata in A major (themes, variations, etc.)

In Latin. All students expecting to take German in the regular course must offer three units of Latin.

Special Students.

Students need not be deterred from seeking to enter the School of Fine Arts of the University because they cannot satisfy all the requirements for full admission to that school. Those requirements are for persons who are candidates for a degree in music or painting. All persons who desire to pursue a special line of work, without conforming to the requirements for entrance, or following a prescribed course, may apply for admission to the School of Fine Arts as special students. The admission of such persons is under the control of the Dean, to whom they should apply, and whose certificate of acceptance must be presented to the Registrar before registration.

Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired. Special students are subject to the same regulations as regular students as to quality of work, attendance at recitation, and examinations.

Ensemble Playing.

An ensemble class meets weekly for the study of concerted music. The class is composed of a violinist, and a violoncellist with whom the piano students who are members take turns in playing trios. Eight-hand piano music is also studied. Thus pupils become acquainted with many masterpieces, which are often inaccessible to music students, and acquire habits of sight-reading and accompanying, which are invaluable to the musician. Advanced students also have the opportunity of playing concertos with the University orchestra.

Clubs.

The University Orchestra is an organization of students directed by the Dean, which gives two concerts each year, and furnishes music for commencement and other occasions.

Classical and popular music is studied. All students who play orchestral instruments with sufficient skill are eligible.

The Glee Club is composed of young men, under the direction of the professor of voice training. They give two concerts a year, and make a concert tour of the state.

The Young Ladies' Glee Club, under the direction of the Dean of the School of Fine Arts, renders music on various occasions, and united with the Men's Glee Club, forms the University chorus which sings at the annual music festival and at other times.

The Mandolin Club is composed of mandolin, banjo and guitar players under a leader appointed by the Dean of the School of Fine Arts, and is associated with the Glee Club in its concerts and tours.

The Normal Class.

The normal class is designed especially for students fitting themselves for teachers, although all students of the school are required to attend. The work consists of lectures on the methods of teaching; papers and discussions by students; careful study of the systems in use in the school, which, in music, aim equally to combine the melodic and musical elements with that of the technical; the examination of other systems, always with a view of shortening the processes and roads to a high grade of musical execution. Once a month the conference is devoted to a discussion of current events.

Tuition.

No student will be accepted for less than a half-term. Students who begin lessons during a half-term must pay tuition for the entire half-term.

The receipt of the treasurer of the School of Fine Arts must be presented to secure enrolment in classes or for private lessons at

the beginning of each quarter. No reduction is made for lessons missed except in case of illness, when the School of Fine Arts shares the loss equally with the pupil.

General.

It is required of all candidates for a degree that two years be spent in residence at the University. During the first two years piano students take one lesson a week from Professor Preyer and one from an assistant, and attend technic class with an assistant; in the third and fourth years all piano lessons are with Professor Preyer. The year is divided in four quarters, two quarters in each term.

The school does not furnish pianos for practice at the building, but instruments can be rented in town for from three to five dollars a month, and grand pianofortes at from seven to ten dollars a month. Pianos rented of private parties, or in connection with board, may often be secured at even lower rates. If desired, several students may unite in renting an instrument, thus materially reducing the expense.

Students in drawing and painting will be required to furnish their own materials, except easels and drawing-boards.

All art work, when finished, is under the control of the instructors until after the close of the public exhibition of student work, at the end of the academic year.

Equipment.

In Music. The department of music of the University occupies a building of its own—North College. The school is well equipped with pianos, including six concert grands; a three-manual pipe-organ, built by King & Sons, of Elmira, N. Y.; charts for sight-reading, for illustrating vocal, pianoforte, and lecture courses; about 100 lantern slides for use in connection with lectures in architecture, the graphic arts, and musical history; a good working collection of plaster casts, engravings, Braun autotypes, and other prints.

In Drawing and Painting. The department of drawing and painting offers instruction in free-hand drawing in charcoal, pencil and pen and ink, painting in oil and water-colors from still-life, the living model and landscape, ornamental design, perspective and pictorial composition.

The Studios are located on the third floor of Snow Hall, and are well equipped with plaster casts from the antique, articles from still-life, books and photographs upon the fine and applied arts.

The Greenhouse is on the same floor, and here plants are cultivated for the use of the class in ornamental design.

One of the studios can be darkened for a lecture-room. It is equipped with a lantern and several hundred slides.

There is a force-press for the printing of etchings and another for color-printing. The students have the use of these presses for the reproduction of their designs.

The mounted specimens of natural history furnish a great deal of valuable material for the students in painting and motifs for the classes in design.

In the studios there are sixty-five casts, among which will be found the Nike of Samathrace; Venus of Melos; Diana Robing; Augustus Cæsar; Tomb of Lorenzo de Medici, by Michel Angelo; Nike, by Praxiteles; several Panagra figures; three lions, by Barye; Satyr and Necessus, from Pompai; Laughing Fawn, in the Louvre; Clyte, from the British museum; Minerva; Sappho; Laughing Boy, by Donatello; Maiden of Lilli, attributed to Raphael; Dante; the Unknown Woman, in the Louvre; Washington and Franklin, by Houdon; the large Bacchic Procession, from the Naples museum; Bucchante, from the Villa Albani, Rome; Boys playing on trumpets, by Luca della Robbia; Madonna and child, with two angels, and the Annunciation, by Andrea della Robbia; Cherub playing on double pipe, by Donatello; Nymph, by Jean Goujon; French peasant, by Carpeaux; the head of Cæsar, from the Trajan column; busts of Brutus, Agrippa, Apollo Belvedere; also, a number of studies of ornament and architectural details.

Pupils will have access to the classical museum, containing a good collection of antique casts—in the round, including the Venus di Milo, the Borghese Warrior, the Emperor Augustus, the Reclining Young Man of the East Pediment of the Parthenon, and the so-called Germanicus; in relief, parts of the frieze of the Parthenon, a part of a Bacchic procession, three plates in high relief, Metopes of the Parthenon, etc.

Busts of Young Augustus, Niobe, Apollo Belvedere, Clytie, Eros, Homer, Socrates, Cicero, and many of the Roman emperors.

Masks of Brutus, Niobe, Laocoon, and Agrippa.

Small full figures of Venus di Milo, Diana Robing, and Narcissus.

Models of the Acropolis of Athens, the Quoit Thrower of Myron, Amazon Antinous, Diana of Gabii, and others; colored charts of Greek and Roman architecture.

Plates.—Seventy colored, by Reinhard, illustrating Roman architecture; 89 plates of forms, painting and decoration of Greek vases; 471 plates illustrating Greek and Roman antiquities; 100 plates illustrative of art mythology; 2000 illustrations of classical monuments; manuscript facsimiles, inscriptions, etc.; phototypes of sculpture and photography.

The Library. The University Library contains a good collection

of works on art, including art exposition and criticism, musical history, vocal and orchestral scores of operas, symphonies, chamber music, oratorios and cantatas, pianoforte and organ music, and collections of standard merit.

Concerts and Recitals.

Concerts are frequently given in Recital hall and in University hall by the professors and advanced students. A concert course is arranged for, which affords students an opportunity of hearing many noted musicians, while the nearness of Lawrence to Kansas City and Topeka is taken advantage of when these cities are visited by the great musical artists or opera companies of the day. Special rates are secured for these events.

Recitals are given fortnightly by the students of the school, at which works studied in the classroom are performed before a small audience of fellow students and their friends. Every student is required to attend these recitals and all concerts, and take part in the programs at least twice a year. These semi-public appearances are of great assistance in acquiring that ease and self-possession so essential to a successful public performance.

Toward the end of the college year the University course and the Oratorio Society of Lawrence unite in a music festival of two days' duration, at which the Chicago Symphony Orchestra and noted soloists take part, and several masterpieces of choral and orchestral music are rendered.

Art Exhibits.

An exhibition of works of art will be held every fall at the University, together with a course of lectures upon subjects relating to the fine arts. Exhibitions of the work of the students are held from time to time.

Expenses.

The instructors in the School of Fine Arts receive no compensation from the state for the work of the courses, and this work must be paid for at rates indicated below.

All bills are payable quarterly, in advance.

No fees will be refunded if the student leaves before the end of a half term. The receipt of the treasurer of the School of Fine Arts must be presented each quarter to secure enrolment in classes, or for private lessons. No lessons are given during the week of the semi-annual examinations.

Rates for regular students (two half-hour lessons a week):

First year.....	Piano, per quarter.....	\$31 00
	Voice, per quarter.....	31 00
	Violin, per quarter.....	26 50
	Elocution, per quarter.....	31 00
	Drawing and painting, per quarter.....	15 00

Second year... Rates the same as for first year.

Third year.... Piano, per quarter	\$33 50
Organ, per quarter	33 50
Voice, per quarter	31 00
Violin, per quarter	26 50
Drawing and painting, per quarter	15 00

Fourth year... Rates the same as for the third year.

Rates for Special Students.

Preliminary years and private lessons with assistants:

Piano, two lessons per week, per quarter	\$13 50
" one lesson a week, per quarter	7 00
Voice, two lessons a week, per quarter	13 50
" one lesson per week	7 00

Lessons with heads of departments (one-half hour lessons):

Piano, two lessons a week, per quarter	28 00
" one lesson a week	16 00
Voice, two lessons a week, per quarter	28 00
" one lesson a week, per quarter	16 00
Organ, two lessons a week, per quarter	28 00
" one lesson a week, per quarter	16 00
Violin, two lessons a week, per quarter	20 00
" one lesson a week, per quarter	12 00
Harmony, counterpoint, composition, instrumentation—	
Per quarter	28 00
In class	10 00
Elocution, two lessons a week, per quarter	28 00
" one lesson a week, per quarter	16 00

Three lessons a week (hour lessons).

Painting, in class	15 00
Physical education, private	25 00
" " in class	5 00

[Other Expenses. There are no dormitories connected with the University. Students find accommodations in the boarding-houses and homes of Lawrence. Information concerning the location of rooming- and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at \$3.75 a week. Some persons who furnish plain rooms and good, plain food receive boarders at \$3 or even \$2.50 a week. Day board in private families and at city restaurants may be obtained for \$2.50 to \$3 a week. Day board in clubs varies from \$2.25 to \$3 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

Courses of Study.

Pianoforte.

Leading to the Degree of Bachelor of Music.

FRESHMAN YEAR.

First Term :

Piano I, twice a week, by appointment. Professor Preyer and assistant.

Technic (Piano V), Wednesday, at 3:30. Assistants.

Harmony (Musical Theory I), Tuesday and Friday, at 2:30. Professor Skilton.

English Literature I, daily, at 3:30. Mr. Bryant.

Physical Education I, once a week, by appointment. Miss Fish.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals and Ensemble Playing.

History of Music, Thursday, at 4:30. Professor Skilton.

Second Term :

Piano I, twice a week, by appointment. Professor Preyer and assistant.

Technic (Piano V), Wednesday, at 3:30. Assistants.

Harmony (Musical Theory I), Tuesday and Friday, at 2:30. Professor Skilton.

Rhetoric I, daily, at 8, 9, and 4:30. Miss Lynn and assistants.

Physical Education II, once a week, by appointment. Miss Fish.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals and Ensemble Playing.

History of Music, Thursday, at 4:30. Professor Skilton.

SOPHOMORE YEAR.

First Term :

Piano II, twice a week, by appointment. Professor Preyer and assistant.

Harmony (Musical Theory II), Tuesday and Friday, at 3:30. Professor Skilton.

Physical Education III, once a week, by appointment. Miss Fish.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals and Ensemble Playing.

History of Music, Thursday at 4:30. Professor Skilton.

One of the following optionals may be taken :

Vocal Culture I, twice a week, with Italian I, twice a week, by appointment. Professor Hubach.

Free-hand Drawing (Drawing and Painting I), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.

Elocution II, three times a week. Mr. Frazier.

German I, daily, at 8, 9, 11:15, or 2:30. Mr. Engel and Miss Corbin.

Second Term :

Piano II, twice a week, by appointment. Professor Preyer.

Musical Analysis (Musical Theory III), Tuesday and Friday, at 3:30. Professor Skilton.

Physical Education IV, once a week, by appointment. Miss Fish.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals and Ensemble Playing.

History of Music, Thursday, at 4:30. Professor Skilton.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture I, twice a week, with Italian I, twice a week, by appointment. Professor Hubach.

Free-hand Drawing (Drawing and Painting I), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.

Elocution II, three times a week. Mr. Frazier.

German II, daily, at 8, 9, 11:15, or 2:30. Mr. Engel and Miss Corbin.

English Literature II, daily, at 11:15. Miss Lynn.

JUNIOR YEAR.

First Term :

Piano III, twice a week, by appointment. Professor Preyer.

Composition (Musical Theory V), Monday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory IV), Tuesday, at 3:30. Professor Preyer.

History of Music, Thursday, at 4:30. Professor Skilton.

English Language IV, Monday, Wednesday, and Friday, at 8. Professor O'Leary and assistants.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Acoustics and Optics (Physics XI), by appointment. Professor Blake.

Recitals and Ensemble Playing.

One of the following optionals may be taken (private lessons are subject to fees):

Voice Culture I or II, twice a week, by appointment. Professor Hubach.

Drawing and Painting I or II. Professor Griffith.

Elocution II, three times a week. Mr. Frazier.

German I or III, daily. Mr. Engel and Miss Corbin.

Education I, daily, at 4:30. Professor Olin.

Second Term:

Piano III, twice a week, by appointment. Professor Preyer.

History of Music, Thursday, at 4:30. Professor Skilton.

Composition (Musical Theory VI), Monday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory IV), Tuesday, at 3:30. Professor Preyer.

Two forensics.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals and Ensemble Playing.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture I or II, twice a week, by appointment. Professor Hubach.

Drawing and Painting I or II. Professor Griffith.

German II or IV, daily. Mr. Engel and Miss Corbin.

Education I, daily, at 4:30. Professor Olin.

Elocution, three times a week. Mr. Frazier.

SENIOR YEAR.

First Term:

Piano IV, twice a week, by appointment. Professor Preyer.

Composition (Musical Theory VI), Wednesday, at 2:30. Professor Preyer.

Counterpoint (Musical Theory VII), once a week, by appointment. Professor Preyer.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Two forensics, or graduating thesis.

Recitations and Ensemble Playing.

Second Term:

Piano IV, twice a week, by appointment. Professor Preyer.

Instrumentation (Musical Theory IX), once a week. Professor Skilton.

Canon and Fugue (Musical Theory VII), once a week. Professor Preyer.

Normal Class, Wednesday, at 4:30. Professor Skilton.
Two forensics, or graduating thesis.

GRADUATE COURSE.

Piano VI, a graduate course, is offered in pianoforte, leading to the degree of master of music (M. M.) The course is open only to graduates of the artists' course who have taken Senior composition work, and to graduates of other schools who have done a corresponding amount of work. In all cases an entrance examination will be insisted upon in both piano and musical composition. The examination will consist of the technic, studies, concertos, etc., and the composition work required for the completion of the Senior year, outlined above; and furthermore, grade I will be required of all applicants. A pianoforte recital is required upon completion of the course and the performance of an original composition is one of the larger forms.

Organ.

Leading to the Degree of Bachelor of Music.

Two years' course open to those who have completed the work of the Sophomore year.

JUNIOR YEAR.

First Term :

- Organ I, twice a week, by appointment. Professor Skilton.
- Composition (Musical Theory V), Monday, at 3:30. Professor Preyer.
- History of Music, Thursday, at 4:30. Professor Skilton.
- English Language IV, Monday, Wednesday and Friday, at 8. Professor O'Leary and assistants.
- Acoustics and Optics (Physics XI), by appointment. Professor Blake.
- Normal Class, Wednesday, at 4:30. Professor Skilton.
- Recitals and Ensemble Playing.
- One of the following optionals may be taken (private lessons are subject to fees):
- Vocal Culture I or II, by appointment. Professor Hubach.
- German I or III, daily. Mr. Engel and Miss Corbin.
- Drawing and Painting I or II. Professor Griffith.
- Elocution, three times a week. Mr. Frazier.

Second Term :

- Organ I, twice a week by appointment. Professor Skilton.
- Composition (Musical Theory VI), Monday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory IV), Tuesday, at 3:30. Professor Preyer.

History of Music, Thursday, at 4:30. Professor Skilton.

Two forensics.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals and Ensemble Playing.

One of the following options may be taken (private lessons are subject to fees):

Vocal Culture I or II, by appointment. Professor Hubach.

Drawing and Painting I or II. Professor Griffith.

Elocution, three times a week. Mr. Frazier.

German II or IV, daily. Mr. Engel and Miss Corbin.

SENIOR YEAR.

First Term:

Organ II, twice a week, by appointment. Professor Skilton.

Composition (Musical Theory VI), Wednesday, at 2:30. Professor Preyer.

Counterpoint (Musical Theory VII), Wednesday, at 9. Professor Preyer.

Church Music, twice a week. Professor Skilton.

Two forensics, or graduating thesis.

Recitals and Ensemble Playing.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Second Term:

Organ II, twice a week, by appointment. Professor Skilton.

Instrumentation (Musical Theory VIII), Wednesday, at 3:30. Professor Skilton.

Counterpoint (Musical Theory VII), Wednesday, at 9. Professor Preyer.

Two forensics, or graduating thesis.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Violin.

Leading to the Degree of Bachelor of Music.

This course is the same as the four-year course in piano, except that Violin I, II, III and IV take the place of Piano I, II, III, IV, and VI.

Vocal Culture.

Leading to the Degree of Bachelor of Music.

FRESHMAN YEAR.

First Term :

Vocal Culture I, twice a week, by appointment. Professor Hubach.

Harmony (Musical Theory I), Tuesday and Friday, at 2:30. Professor Skilton.

English Literature I, daily, at 3:30. Mr. Bryant.

Italian I, twice a week, by appointment.

Physical Education I, once a week. Miss Fish.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals.

History of Music, Thursday, at 4:30. Professor Skilton.

Second Term :

Vocal Culture I, twice a week, by appointment. Professor Hubach.

Harmony (Musical Theory I), Tuesday and Friday, at 2:30. Professor Skilton.

English Literature II, daily, at 8, 9, and 4:30. Miss Lynn and assistants.

Italian I, twice a week, by appointment.

Physical Education II, once a week. Miss Fish.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals.

History of Music, Thursday, at 4:30. Professor Skilton.

SOPHOMORE YEAR.

First Term :

Vocal Culture II, twice a week, by appointment. Professor Hubach.

Harmony (Musical Theory II), Tuesday and Friday, at 3:30. Professor Skilton.

Physical Education III, once a week. Miss Fish.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals.

History of Music, Thursday, at 4:30. Professor Skilton.

One of the following optionals may be taken (private lessons are subject to fees):

Piano I, twice a week. Professor Preyer.

Free-hand Drawing (Drawing and Painting I), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.

Elocution II, three times a week. Mr. Frazier.

German I, daily, at 8, 9, 11:15, or 2:30. Mr. Engel and Miss Corbin.

Second Term :

Vocal Culture II, twice a week, by appointment. Professor Hubach.

Harmony, Tuesday and Friday, at 3:30. Professor Skilton.

Physical Education IV, once a week. Miss Fish.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Recitals.

History of Music, Thursday, at 4:30. Professor Skilton.

One of the following optionals may be taken (private lessons are subject to fees):

Piano I, twice a week, by appointment. Professor Preyer.

Free-hand Drawing (Drawing and Painting I), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.

Elocution IV, three times a week. Mr. Frazier.

German II, daily, at 8, 9, 11:15, or 2:30. Mr. Engel and Miss Corbin.

English Literature II, daily, at 11:15. Miss Lynn.

JUNIOR YEAR.

First Term :

Vocal Culture III, twice a week, by appointment. Professor Hubach.

Composition (Musical Theory V), Monday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory IV), Tuesday, at 3:30. Professor Preyer.

History of Music, Thursday, at 4:30. Professor Skilton.

English Literature IV, Monday, Wednesday, and Friday, at 8. Professor O'Leary and assistants.

Acoustics and Optics (Physics I), by appointment. Professor Blake.

Normal Class, Wednesday, at 4:30. Professor Skilton.

One of the following optionals may be taken (private lessons are subject to fees):

Piano I or II, twice a week, by appointment. Professor Preyer.

Drawing and Painting I or III. Professor Griffith.

Elocution, three times a week. Professor Frazier.

German I or III, daily. Mr. Engel and Miss Corbin.

Second Term :

Vocal Culture III, twice a week, by appointment. Professor Hubach.

Composition (Musical Theory VI), Monday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory IV), Tuesday, at 3:30. Professor Preyer.

History of Music, Thursday, at 4:30. Professor Skilton.

Normal Class, Wednesday, at 4:30. Professor Skilton.

Two forensics.

One of the following optionals may be taken (private lessons are subject to fees):

Piano I or II, twice a week, by appointment. Professor Preyer.

Drawing and Painting I or II. Professor Griffith.

Elocution, three times a week. Mr. Frazier.

German II or IV, daily. Mr. Engel and Miss Corbin.

SENIOR YEAR.

First Term:

Vocal Culture IV, twice a week, by appointment. Professor Hubach.

Composition (Musical Theory VI), Wednesday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory VII), Thursday, at 3:30. Professor Preyer.

Two forensics, or graduating thesis.

Second Term:

Vocal Culture IV, twice a week, by appointment. Professor Hubach.

Instrumentation (Musical Theory VIII), Wednesday, at 3:30. Professor Skilton.

Counterpoint (Musical Theory VII), Wednesday, at 9. Professor Preyer.

Opera, once a week. Professor Hubach.

Dramatic Action, once a week, by appointment. Mr. Frazier.

Two forensics, or graduating thesis.

Drawing and Painting.

Leading to the Degree of Bachelor of Painting.

FRESHMAN YEAR.

Drawing (Drawing and Painting I), Monday, Wednesday, and Friday, 9 to 12:15, throughout the year. Professor Griffith.

Painting (Drawing and Painting VI), Monday, Wednesday, and Friday, 1:30 to 4:30, 2d term. Professor Griffith.

English Literature I, 1st term, daily, at 3:30. Mr. Bryant.

English Literature III, 2d term, daily, at 8, 9, and 4:30. Miss Lynn and assistants.

Composition (Drawing and Painting IX), Friday, at 4:30, throughout the year. Professor Griffith.

Perspective (Drawing and Painting X), Wednesday, at 4:30, throughout the year. Professor Griffith.

Physical Education I and II, twice a week, throughout the year. Miss Fish.

SOPHOMORE YEAR.

Drawing (Drawing and Painting II), 1st term, and 2d term, (a), Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

Drawing (Drawing and Painting III and IV), Monday, Wednesday, and Friday, 9 to 12:15, throughout the year. Professor Griffith.

Ornamental Design (Drawing and Painting XII), Monday, at 4:30, throughout the year. Professor Griffith.

Composition (Drawing and Painting IX), Friday, at 4:30, throughout the year. Professor Griffith.

Perspective (Drawing and Painting XI), Wednesday, at 4:30. Professor Griffith.

JUNIOR YEAR.

Painting (Drawing and Painting VII), 1st term, and 2d term, (a), Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

Painting (Drawing and Painting VIII), 2d term (b), Monday, Wednesday, and Friday, 1:30 to 5:30. Professor Griffith.

Ornamental Design (Drawing and Painting XIII), Wednesday, at 4:30, throughout the year. Professor Griffith.

Composition (Drawing and Painting IX), Friday, at 1:30, throughout the year. Professor Griffith.

History of the Fine Arts, Monday and Thursday, at 2:30, throughout the year. Professor Skilton.

History of Greek Art (Greek XVII), 2d term, daily, at 11:15. Professor Wilcox.

English Rhetoric IV, 1st term, Monday, Wednesday, and Friday, at 8. Professor O'Leary and assistants.

Acoustics and Optics (Physics XI), by appointment. Professor Blake.

Two forensics, 2d term.

SENIOR YEAR.

Painting (Drawing and Painting VII), 1st term, and 2d term, (a), Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

Painting (Drawing and Painting VIII), 2d term, (b), Monday, Wednesday, and Friday, 1:30 to 5:30. Professor Griffith.

- History of Ornament (Drawing and Painting XIII), Friday, at 11:15 throughout the year. Professor Griffith.
- Composition (Drawing and Painting IX), Friday, at 4:30, throughout the year. Professor Griffith.
- History of the Fine Arts, 1st term, Monday and Thursday, at 2:30. Professor Skilton.
- Modern Art (History of the Fine Arts III), 2d term, Monday and Thursday, at 2:30. Professor Griffith.
- Four forensics, or graduating thesis.
- Graduating painting.

Elocution.

Students who so desire may specialize throughout the course along the line of oratory, debate and extempore speaking.

JUNIOR YEAR.

First Term :

- Principles of Vocal Expression (Elocution I). Two hours a week. By appointment. Mr. Frazier.
- American Prose and Poetry (Elocution II). Two hours a week. By appointment. Mr. Frazier.
- English Literature I. Daily at 3:30. Mr. Bryant.
- Physical Education. Miss Fish.
- One optional course may be chosen from the College upon consent of the instructor.

Second Term :

- Lecturing and Reading (Elocution III). Two hours a week. By appointment. Mr. Frazier.
- English Prose and Poetry (Elocution IV). Two hours a week. By appointment. Mr. Frazier.
- English Rhetoric I. Daily at 8, 9 and 4:30. Miss Lynn and assistants.
- Physical Education. Miss Fish.
- One optional course may be chosen from the College upon the consent of the instructor.

SENIOR YEAR.

First Term :

- The Modern Drama (Elocution V). Two hours a week. By appointment. Mr. Frazier.
- Platform Work (Elocution VI). Two hours a week. By appointment. Mr. Frazier.
- English Rhetoric III. Daily, at 8. Professor O'Leary and assistants.

Public Speaking I. Daily, at 1:30. Mr. Frazier and assistants.
Physical Education. Miss Fish.

Second Term :

Methods of Teaching Reading (Elocution VII). Two hours a week. By appointment. Mr. Frazier.

Shakspeare (Elocution VIII). Two hours a week. By appointment. Mr. Frazier.

Logic and Psychology. Daily, at 8. Mr. Hogg.

English Literature V. Daily, at 10:15. Professor Dunlap.

Graduation recital.

Artists' Courses

In Piano, Voice, Violin, Organ, or Musical Composition.

These courses are the same as the four-year collegiate courses in these subjects, requiring for graduation a graduating recital or a program of original musical compositions, or a combination of both.

For entrance and continuation in these courses the highest grade will be required in all examinations in piano, voice, organ, violin, or composition.

Two-year Collegiate Courses.

These courses are intended for those students who feel that their time is limited. They are especially designed for teachers. The work is identical with that of the first and second years of the four-year collegiate courses outlined above. A diploma is given upon completion of one of these courses.

Normal Course

In Public-school Music and Singing at Sight.

This work consists of the Freshman year of the four-year course in vocal culture, together with Vocal Culture VI and VII, upon the completion of which a teacher's certificate is given.

Courses of Instruction.

DRAWING AND PAINTING.

Professor GRIFFITH.

All courses except V are required of students of drawing and painting and are open to other students of the School of Fine Arts who are prepared for them.

I.—FREE-HAND DRAWING. Free-hand drawing in charcoal, from the cast. The method of instruction aims to teach the student to construct form in a simple and correct manner. Freshmen, throughout the year, Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.

II.—FREE-HAND DRAWING. Free-hand drawing in charcoal, from life. Designed to give firm construction in drawing and training in grasping the essential character of the model. Sophomore, 1st term, and 2d term, (*a*), Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

III.—FREE-HAND DRAWING. Free-hand drawing in pen and ink, from casts and still life. The technique of pen drawing for reproduction. Sophomore, 1st term, Monday, Wednesday, and Friday, 9 to 12:15. Professor Griffith.

IV.—FREE-HAND DRAWING. Free-hand drawing with water-colors. Wash-drawing for reproduction by the half-tone process. Sophomore, 2d term, Monday, Wednesday, and Friday, 9 to 12:15. Professor Griffith.

V.—DRAWING. This course aims to meet the needs of two classes of students: Students who wish training in artistic perception and graphic expression, for its general culture value; and technical students, to whom some drawing is essential. It consists of the first eighteen weeks' work, covered by courses I, III, IX, and X, three hours daily.

VI.—PAINTING. Painting with water-color, oil, or pastille, from still life. Students begin the study of color in this class. The observation and reproduction of simple masses of form and color. Freshman, 2d term; Sophomore, 1st term and 2d term; Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

VII.—PAINTING. Painting with water-color, oil, or pastille, from life. Portrait painting is the object of the instruction given in this class. Junior and Senior, 1st and 2d terms, (*a*), Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

VIII.—PAINTING. Painting of landscape and human figures in the open air. Junior and Senior, 2d term, (b), Monday, Wednesday, and Friday, 1:30 to 5:30. Professor Griffith.

IX.—COMPOSITION. Throughout the entire course every student is required to study the pictorial compositions of the masters, and each week to make one original composition upon a given subject. Friday, 4:30 to 5:30. Professor Griffith.

X.—PERSPECTIVE. Elementary perspective, shadows, and reflections. Freshman, 1st term, Wednesday, 3:30 to 4:30. Professor Griffith.

XI.—PERSPECTIVE. Advanced perspective; the application of the principles of perspective to pictorial purposes. Freshman, 2d term, Wednesday, 3:30 to 4:30. Professor Griffith.

XII.—ORNAMENTAL DESIGN. The anatomy of pattern. Sophomore, 1st term, (a), Wednesday, 4:30 to 5:30. The planning of ornament. Sophomore, 1st term, (b), and 2d term, Monday, 4:30 to 5:30. Professor Griffith.

XIII.—ORNAMENTAL DESIGN. The application of ornament. Junior, 1st and 2d terms, Monday, 4:30 to 5:30. The history of ornament. Senior, 1st and 2d terms, Friday, at 11:15. Professor Griffith.

EDUCATION.

COURSES FOR UNDERGRADUATES ONLY.

I.—THE HISTORY OF EDUCATION. A survey of both ancient and modern periods. Studies of typical movements in education, the development of national systems, and the work of great educators. 1st and 2d terms, daily, at 4:30. Professor Olin.

ELOCUTION.

Courses I to VIII are arranged to cover two years of consecutive work in the University; the first four courses are to be taken the first year, the four remaining courses the second year. Course IX is for special students only.

I.—PRINCIPLES OF VOCAL EXPRESSION. Purpose in utterance; types of utterance—formulative, discriminative, emotional, and volitional. Study of grouping. Text, Chamberlain and Clark. Two hours a week, by appointment. Mr. Frazier.

II.—AMERICAN PROSE AND POETRY. The critical analysis and study for purpose of oral interpretation of some of the standard poems and prose compositions of American authors. Two hours a week, by appointment. Mr. Frazier.

III.—LECTURING AND READING. Training in the use of the manu-

script in the presentation of original productions. Practice in formulating, outlining and preparing papers and informal talks on various occasions. Suggestions for reading articles other than one's own. Two hours a week, by appointment. Mr. Frazier.

IV.—ENGLISH PROSE AND POETRY. A study of a limited number of representative English poems and prose compositions from the standpoint of their vocal interpretation. Two hours a week, by appointment. Mr. Frazier.

V.—THE MODERN DRAMA. Students in this course will be given training in dramatic construction and opportunity to study in some detail the theory of stage business in the presentation of modern plays. Two hours a week, by appointment. Mr. Frazier.

VI.—PLATFORM WORK. Particular preparation for public reading, lecturing, and impersonation. Each student will arrange and present in public an entire program. Two hours a week, by appointment. Mr. Frazier.

VII.—SHAKSPERE. One comedy and one tragedy will be studied and the student will be required to memorize some of the more important scenes and to impersonate the various characters. Two hours a week, by appointment. Mr. Frazier.

VIII.—METHODS OF TEACHING READING. The aims of this course are: (1) To present a brief review of past elocutionary methods; (2) to lay out a definite and graded method of expressional development; and (3) to give the student opportunity to teach under the direction of the instructor. Two hours a week, by appointment. Mr. Frazier.

IX. SPECIAL CONFERENCES. The object of this course is to give students an opportunity to enroll for special work in oral expression without becoming a regular student in the school. Hours by appointment. Mr. Frazier.

ENGLISH LANGUAGE AND LITERATURE.

I.—ENGLISH LITERATURE. General history, supplemented with class study of representative authors and with required library reading. Text-books. Pancoast's *Introduction to English Literature* and Pancoast's *Standard English Poems*. Required of all Freshmen in the School of Fine Arts. 1st or 2d terms: 1st term, at 9; 2d term, at 3:30. Mr. Bryant.

II.—ENGLISH LITERATURE. (a) English literature of the eighteenth century. Text-book, Gosse's *History of Eighteenth Century Literature*. Lectures, discussions, essays, and collateral library work. (b) An elementary course in English poetry; text-book, Pancoast's *Standard English Poems*. Lectures, reports, and collateral

library work. 1st or 2d terms, daily: 1st term, at 2:30; 2d term, at 11:15. Miss Lynn.

III.—RHETORIC AND ENGLISH COMPOSITION. Outlines of rhetoric, with exercises and themes. Required of all Freshmen in the School of Fine Arts. 1st or 2d term, daily: 1st term, at 8, 9, 4:30, and at other hours to be arranged; 2d term, at 8, 9, 2:30, and at other hours to be arranged. Miss Lynn and assistants.

IV.—NARRATION AND DESCRIPTION. Study of general principles, with exercises. Required of all Juniors in the School of Fine Arts. 1st term: Lectures Monday, Wednesday, and Friday, at 8; conferences Tuesday and Thursday, at 8. Professor O'Leary and assistants.

V.—EXPOSITION AND ARGUMENT. Study of general principles, with exercises and briefs. 2d term: Lectures Monday, Wednesday, and Friday, at 8; conferences Tuesday and Thursday, at 8. Mr. Raymond and assistants.

GERMAN.

I.—OUTLINE OF GRAMMAR. The first twenty-four lessons of Otis, with composition exercises. Huss's Reader, about fifty pages. 1st term, daily, at 8, 9, 11:15, and 2:30. Mr. Engel, and Miss Corbin.

II.—HUSS'S READER, completed, ZSCHOKKE, KLEIST, HEYSE (100 pp.), and SCHILLER'S WILHELM TELL, complete. Also special exercises on case government and auxiliary verbs (Otis, lessons 25-27), and sight-reading. 2d term, daily, at 8, 9, 11:15, and 2:30. Mr. Engel and Miss Corbin.

III.—(1) LESSING'S MINNA VON BARNHELM. Geschichte des 30-jährigen Krieges. Outline of German literature in dictations and lectures. Sight-reading. 1st term, daily, at 8, 9, 11:15, and 3:30. Mr. Engel and Miss Corbin.

IV.—SCHILLER'S WALLENSTEIN (complete). 2d term, daily, at 8, 9, 11:15, and 3:30. Mr. Engel and Miss Corbin.

GREEK.

XVII.—HISTORY OF GREEK ART. Lectures, recitations, private reading, writing of themes. 2d term, daily, at 11:15. Professor Wilcox.

MUSICAL THEORY.

Professor SKILTON.
Professor PREYER.

Courses I to V, inclusive, are required of all students in music. Courses VI to VIII, inclusive, are required of all students in the collegiate courses in music, and are optional for students in the artist courses.

I.—HARMONY. The study of tone relations, scales, intervals; the formation and progression of chords, concords and discords, and modulations. The practical work consists of the harmonization of short musical sentences, chants, chorals, and original melodies; the study of all chord progressions at the piano and their recognition by the ear. Freshman, throughout the year, Tuesday and Friday, at 2:30. Professor Skilton.

II.—HARMONY. The study of inharmonic tones (suspensions, passing notes, etc.), the harmonization of original melodies, with practical applications at the piano. Sophomore, 1st term, Tuesday and Friday, at 3:30. Professor Skilton.

III.—MUSICAL ANALYSIS. The simple homophonic and polyphonic forms; the phrase, period, two-part song, three-part song, and song with trio. Classical models, with original work. Sophomore, 2d term, Tuesday and Friday, at 3:30. Professor Skilton.

IV.—COUNTERPOINT. The different orders of single counterpoint in two, three, four or more parts. Combined counterpoint. Contrapuntal exercises applied to higher problems, such as the treatment of chorals, etc. Junior, Tuesday, at 3:30. Throughout the year. Professor Preyer.

V.—MUSICAL COMPOSITION. The homophonic forms, with original work in the classical dance forms—minuet, gavotte, etc.—and the accompaniment for the vocal solo and the violin solo. Junior, 1st term, Monday, at 3:30. Professor Preyer.

VI.—MUSICAL ANALYSIS. The variation and rondo forms; the sonatine and sonata forms. The analysis of Beethoven's sonatas. Senior, 1st term, Wednesday, at 2:30. Professor Preyer.

VII.—DOUBLE COUNTERPOINT; CANON AND FUGUE. Double counterpoint in the octave, tenth, and twelfth. The various forms of canon and their application to higher problems. The most essential parts of the fugue, such as the subject, answer, counter-theme, episode, stretto. The composition of the fugue as a whole, in two, three and four parts. Senior, Monday, at 9, throughout the year. Professor Preyer.

VIII.—INSTRUMENTATION. The nature, characteristics and treatment of the various instruments of the orchestra. The string quartette. Orchestral accompaniment. The overture, symphony. The cantata. Practical work for the University orchestra. Senior, 2d term, Wednesday, at 2:30. Professor Skilton.

ORGAN.

Professor SKILTON.

Courses I to III, inclusive, are required of all organ students.

I.—MANUAL AND PEDAL STUDIES. Merkel and Archer. Sophomore, 2d term, twice a week, by appointment. Professor Skilton.

II.—STUDIES AND SELECTIONS. Dudley Buck's Choir Accompaniment; Bach's Easy Preludes and Fugues; Buck's Study in Pedal Phrasing; selections from Church and Concert Organist, Eddy, The Organist, Whiting, etc. Junior, twice a week throughout the year, by appointment. Professor Skilton.

III.—CHORUS ACCOMPANIMENT, FUGUES, AND STANDARD COMPOSITIONS. Extempore playing; Bach's Fugues; sonatas by Mendelssohn, Merkel, and Bach; accompaniment for solos, masses, cantatas, and oratorios; compositions by Best, Guilmant, Ritter, Saint-Saëns, Thiele, Widor, Eddy, etc. Senior, twice a week throughout the year, by appointment. Professor Skilton.

PIANOFORTE.

Professor PREYER.

Miss GREISSINGER.

Miss COOKE.

Miss MILLER.

Miss RIGHTER.

Miss WIEDEMANN.

Courses I to IV, inclusive, and course VI, are open only to students of the School of Fine Arts. Course V is open only to graduates in piano.

I.—TECHNIC. Hanon: Virtuoso Pianist. A limited number of studies from the following: Cramer-Buelow, sixty selected etudes; Preyer, twenty etudes, op. 35 (Shirmer); Bach, two- and three-part inventions (Litolf 1742), etc. Sonatas by Haydn, Mozart, Beethoven. Selections from classic and modern compositions. Freshman, throughout the year, three in a class, twice a week, by appointment. Assistants.

II.—Philipp: Practical Exercises. Etudes, selected according to the needs of the pupil, from Clementi's Gradus ad Parnassum; Jensen, op. 32; MacDowell, op. 36; Haberbier, Etudes Poesies, op. 53; Bach, English Suites. Concertos by Mozart, Hummel, etc. Selections from classic and modern compositions. Sophomore, throughout the year, three in a class, twice a week, by appointment. Assistants.

III.—Philipp: Daily Exercises. Etudes from Moscheles, op. 70; Seeling, Concert Etudes, op. 10; Chopin, Preludes; Bach, Well-tem-

pered Clavichord (Reinecke, B. and H.); concertos by Beethoven, Mendelssohn, etc.; concert pieces by classic and modern composers. Junior, throughout the year, private lessons, twice a week, by appointment. Professor Preyer.

IV.—Philipp: Daily Exercises (continued). Philipp, etudes for the left hand; etudes from Chopin, op. 10 and op. 20; Rubinstein, op. 23, etc. Sonatas and Concertos by Beethoven, Weber, Grieg, etc. Concert pieces by modern composers. Senior, throughout the year, private lessons, twice a week, by appointment. Professor Preyer.

V.—A course for the study of pianoforte methods, aiming to develop independence of the fingers, and acquiring correct habits of practicing the scales, arpeggios, trills, octaves, chords, etc. Freshman and Sophomore, throughout the year, Wednesday, 3:30 to 4:30. Professor Preyer.

GRADUATE COURSE.

VI.—Philipp (continued). Modern etudes, by Liszt, MacDowell, etc.; selections from Lebert & Stark, Pianoforte School, book IV. Transcriptions of Bach's organ fugues, by Liszt, Tausig, D'Albert, etc. Modern concert pieces and concertos. Twice a week throughout the year. Professor Preyer.

PHILOSOPHY.

I.—ELEMENTARY PSYCHOLOGY. A part of the term, approximately one-third, is devoted to an exposition of the mental processes of deductive logic. Hyslop's *Logic and Argument* is used as a basis for this work. The remainder of the course is devoted to the study of the mental processes in general, and James's *Psychology*, Briefer Course, serves as a text. 1st and 2d terms, daily, at 8. Mr. Hogg.

PHYSICAL EDUCATION.

I.—MARCHING. Elementary work in free-hand, dumb-bells, wands, and clubs; hygienic work on the apparatus; gymnastic games for recreation. 1st term. Miss Fish.

II.—ADVANCED WORK IN FREE-HAND. Calisthenics; and hygienic work on the apparatus; athletics of an all-around nature games for skill and physical judgment. 2d term. Miss Fish.

III.—EDUCATIONAL WORK WITH LIGHT AND HEAVY APPARATUS. Fancy marching; games requiring skill and self-control; squad-leading in calisthenics and apparatus work. 1st term. Miss Fish.

IV.—SPECIALIZING IN SOME LINE OF EXERCISE. Fencing and broadsword; conducting games, competitions, and exhibitions. 2d term. Miss Fish.

PHYSICS.

XI.—ACOUSTICS AND OPTICS. A course of about twenty lectures, with demonstrations, upon the scientific basis of harmony and of painting. Required of students in the School of Fine Arts. 2d term, by appointment. Professor Blake.

VIOLIN.

Miss BOWERSOCK.

Courses I to IV, inclusive, are required of all violin students.

I.—SCHRADIECK'S FINGER TECHNIC; Hermann's Violin School, book I; Hermann's School of Scales, book I; Kayser's Thirty-six Etudes, books II and III; violin duets by Dancla, Mazas, Viotti; selections from the simpler compositions of Hermann, Singelee, Alard, De Beriot, Dancla, Papini, Leonard, and Daube. By appointment.

II.—HERMANN'S VIOLIN SCHOOL, BOOK II; Scales and Technic, by Bendix and Schradieck; Hermann's School of Scales, book II; Kreutzer's Forty Studies; sonates selected from Mozart and Handel; violin duets by Mazas; concertos from the early Italian masters; selections from the compositions of David, De Beriot, Viotti, Rode, Kreutzer, Sauret, Papini, Handel, and Bazzini. Ensemble playing. By appointment.

III.—SCALES AND TECHNIC BY BENDIX (continued); Hermann's School of Scales, book III; Fiorillo's Thirty-six Etudes; concertos by De Beriot, Spohr, and Mozart. Selections from the compositions of Sauret, David, Wieniawski, Hauser, Vieuxtemps, Bazzini, and Bohm; sonates for violin and piano, selected from Beethoven, Grieg, and Tartini. Ensemble playing. By appointment.

IV.—SCALES AND TECHNIC BY SCHRADIECK; Hermann's School of Scales, book III; Rode's Thirty-six Caprices; Dancla's Twenty Etudes; concertos by Spohr, Mendelschön, Beethoven, and Bruch; sonates selected from J. S. Bach; compositions by Sarasate, Hubay, Raff, Vieuxtemps, Wieniawski, Sauret, Ernst, Brahms, and Ries; violin duets by Spohr. By appointment.

VOCAL CULTURE.

Professor HUBACH.

Mrs. LYONS.

Courses I to V, inclusive, are required of all students taking the four years' work in vocal culture; courses I, II, III and V are open to all other musical students. Course V is required of all Sophomores. Course VIII is required of all students wishing to graduate as teachers.

I.—TONE-PLACING. Dictation exercises for the special needs of the individual voice. Sustained tones. Breath control and the true legato. The study of conditions necessary for the poising of the voice. The Italian vowels. Technical exercises selected from Vannini, Lamperti, Sieber, Abt, Panofka, Garcia, and Shakspeare. Simple English and Italian songs. Freshman, twice a week throughout the year, by appointment.

II.—VOICE EXTENSION. Development of tone. Breath control. Exercises for flexibility from Lamperti, Nava, Concone, Vannini, Bordogni, Sieber, and Shakspeare. English and Italian ballads. German lieder. Church solos. Sophomore, twice a week throughout the year, by appointment.

III.—STUDY OF TONE COLOR. Exercises for flexibility, continued. Embellishments. Exercises from Concone, Panofka, Marchesi, Garcia, Panseron, and Rossini. German lieder, English oratorio, and church solos. Junior, twice a week throughout the year, by appointment.

IV.—METHODS OF TONE-PLACING AND BREATHING. A comparative study. Exercises for bravura singing from Lamperti. Flexibility and finishing exercises from the masterpieces of vocalization. Stage deportment. Selections from Italian opera and English oratorio. Senior, twice a week throughout the year, by appointment. Professor Hubach.

V.—SIGHT-SINGING. Sound-relationship. Time-relationship. Rythm. Dictation Exercises. Unison, two-part, three-part, and four-part. Professor Hubach.

VI.—OPERA. Solo and Chorus Drill in the Standard Operas. Those taking this course are united with other singers from the University and city to form the School of Grand Opera. Two presentations of opera will be given each year. Monday and Thursday evenings, 6:30 to 8.

VII.—ORATORIO. Solo and Chorus Drill in the Standard Works. Singers from the University and city are invited to form the Oratorio Society. Presentation of oratorio will be given each year. This society annually engages the Chicago Symphony Orchestra and eminent soloists for the May Festival.

VIII.—TEACHER'S COURSE. For students desiring to prepare themselves especially for teaching. Text: Manual Garcia. Professor Hubach.

VI.—The School of Pharmacy.

Faculty.

FRANK STRONG, Ph. D., President.

LUCIUS E. SAYRE, Ph. M., Dean. Professor of Pharmacy.

EPHRAIM MILLER, Ph. D., Professor of Mathematics.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry.

ERASMUS HAWORTH, Ph. D., Professor of Mineralogy.

WILLIAM C. STEVENS, M. S., Professor of Botany.

HENRY B. NEWSON, Ph. D., Associate Professor of Mathematics.

MARSHALL A. BARBER, A. M., Associate Professor of Cryptogamic
Botany and Bacteriology.

EDWARD BARTOW, Ph. D., Associate Professor of Chemistry.

IDA H. HYDE, Ph. D., Associate Professor of Physiology.

RAPHAEL D. O'LEARY, A. B., Associate Professor of English.

MARTIN E. RICE, M. S., Assistant Professor of Physics.

MARGARET LYNN, A. M., Assistant Professor of English.

ELMER F. ENGEL, A. M., Assistant Professor of German.

GEORGE L. LINCOLN, A. M., Assistant Professor of French.

ALMA LE DUC, Ph. B., Assistant Professor of French.

L. D. HAVENHILL, Ph. M., Secretary. Assistant Professor of Pharmacy.

CHARLES M. STERLING, A. B., Assistant Professor of Pharmacognosy.

JOHN N. VAN DER VRIES, Ph. D., Assistant Professor of Mathematics.

CHARLES H. ASHTON, A. M., Assistant Professor of Mathematics.

HERBERT W. EMERSON, B. S., Instructor in Pharmacy.

DAVID F. MCFARLAND, M. S., Assistant Professor of Chemistry.

RALPH E. BASSETT, A. M., Assistant Professor of French.

WILLIAM E. HIGGINS, LL. B., Associate Professor of Law.

MARGUERITE E. WISE, A. B., Instructor in Botany.

Scope of the School.

The object of this school is to give to its students a thorough practical training in all of those branches connected with the pharmaceutical profession in its various departments. A special emphasis is purposely placed upon chemistry, as this is the foundation of all pharmaceutical work. In the department of pharmacognosy there are offered facilities which are deemed adequate to this important branch of pharmacy and medicine.

The three courses offered by the school are arranged logically and progressively; the instruction is given according to modern methods, and in the spirit of those principles which, in their application to other classes of modern technical schools, have proved so eminently successful.

Degrees. The courses of study in the School of Pharmacy lead to the following degrees:

BACHELOR OF SCIENCE.

PHARMACEUTICAL CHEMIST.

Requirements for Admission.

There are two methods of admission to the School of Pharmacy; first, by examination; second, by certificate.

By Examination. Times and place of examination for subjects required for admission to the School of Pharmacy will be found on page 66 of this catalogue, under The College.

By Certificate. Candidates may enter the School of Pharmacy on certificates from the schools indicated in the next paragraph. The plan of entrance by certificates, noted under The College, page 67, is followed.

FOR THE TWO- AND THREE-YEAR COURSES.

Candidates for admission to these courses must present certificates of graduation from accredited schools, or, in lieu of this, must present certificate covering work equal to that covered by graduation from the eighth grade of a grammar school in arithmetic, United States history, geography, English grammar, and civil government, and either be examined in, or present certificates from accredited high schools, academies, or colleges for high-school physics, one year, and Latin one year.

In 1904 students deficient in Latin and physics will be admitted with the condition that these deficiencies be made up during the first year of residence.

FOR THE FOUR-YEAR COURSE.

Candidates for admission to the four-year course must conform, by examination, or certificate, to the requirements for entrance to the Freshman year of the College. (See page 68 of this catalogue.)

Special Students.

Special students, not candidates for a degree, may be admitted to the School of Pharmacy without conforming to the requirements for entrance. The admission of such students is under the control of the Dean, and his certificate of recommendation must be procured before the candidate presents himself to the Registrar.

Expenses.

By legislative enactment a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering the School of Pharmacy. All students are required to pay an incidental fee of thirty dollars. Non-residents of Kansas must pay a matriculation fee of ten dollars and an incidental fee of fifty dollars. If the student so elects, one-half of the incidental fee may be paid at the beginning of each term.

Further information will be found in regard to expenses and self-help under the College, page 83 of this catalogue.

The Pharmaceutical Society.

This society was organized in December, 1886, by the students and instructors of the department, for the purpose of assisting each other in the study of the sciences especially related to the art of pharmacy, in the practical applications of the same, and for friendly intercourse. Meetings are held biweekly during the school year.

As an adjunct to the society, an "annex" was established in 1890, whose aim it is to secure positions for graduates, and clerks for employers, who are graduates of the school.

Library.

The School possesses an extensive library, and is the regular recipient of the leading pharmaceutical journals and periodicals of America, England, Germany and France.

For the convenience of students in chemistry and pharmacy, a branch library is provided in the building and adjacent to the chemical and pharmaceutical laboratories, where all the principal reference books and periodicals may be found.

Collections.

The Pharmacy School possesses an extensive herbarium of medicinal plants, together with a collection of photographs of representing nearly 200 species. This, in conjunction with the large herbarium of the botanical department, is available to students. Several hundred microscopical slides are at hand for use with the projection lantern, showing various drugs in cross and longitudinal section, as well as in powdered form; a large assortment of lantern slides, illustrating plants, drugs, prescriptions, pharmacies, and places and subjects of pharmaceutical interest; several cases of crystal models; an extensive collection of official and unofficial salts, alkaloids, drugs and medicines, besides numerous smaller collections of particular interest.

Equipment.

The School of Pharmacy is located in the northeast corner of the campus, and occupies the first two floors and basement of the east wing of the new Chemistry and Pharmacy building.

The basement of the pharmacy department contains two research laboratories and the general pharmacy stock-room. The contents of this room are invoiced, under the direction of an instructor, every year by students as part of their business training and as part of their practical drug-store work.

On the first floor are the two large general laboratories, balance-room, supply-room and the office and private laboratory of the Junior assistant. The Junior laboratory accommodates sixty students and is equipped with desks, lockers, and individual gas- and water-supplies. The Senior laboratory is similarly equipped and accommodates fifty-six students. Opening from this on the east is a special balance-room, provided with analytical balances for the exclusive use of the pharmacy students. The supply-room is conveniently located between the two laboratories. All the material necessary for the special courses in pharmacy can be obtained here.

The offices and private laboratories of the Dean and the secretary, the lecture-room, museum of pharmacognosy, and the prescription research laboratory are on the second floor.

The lecture-room with a seating capacity of 100, is provided with a large lecture-table and abundantly supplied with special pharmaceutical apparatus. The museum of pharmacognosy is directly above the Senior laboratory, and is devoted to the branches, pharmacognosy, pharmacal botany, and microscopy. Ample material is supplied for the elucidation of these three important branches of modern pharmacy. In this room is one of the latest improved Bausch & Lomb stereopticons, with microscopical projection attachment, an instrument indispensable to the proper treatment of these subjects.

The prescription research laboratory is located at the rear of the lecture-room, and is equipped after the manner of a regular prescription pharmacy. It is furnished with a thirty-foot work-table provided with gas and water, three large double prescription cases, each differing in style and manner of equipment, and fifty feet of tincture shelving. On these shelves are found various patterns of shop-bottles offered to American pharmacists. The entire equipment of the room has been carefully selected with a view to give comprehensive and varied instruction. In this room practical training is given in the preparation of medicines and the compounding of difficult prescriptions.

Laboratory instruction for pharmacy students is also given in the laboratories of the following departments: Chemistry, botany, mineralogy, physiology, and physics.

Apparatus.

For the various practical courses offered by this School a large amount of laboratory apparatus, of domestic and foreign types, is supplied. The various laboratories are equipped for manufacturing purposes, so that any preparation of the United States pharmacopoeia can be made by any of the official methods, and, in addition, appliances and materials are at hand for the unofficial and extra pharmacopoeial products.

The lecture-table is abundantly supplied with illustrative apparatus, so that the student may see before him the various processes in operation which may be carried on in the laboratories and at the prescription counters. Every attention has been given to illustrate pharmacy in all its phases.

The following is a partial list of special apparatus: Bausch & Lomb projection lantern and stereopticon, Laurent half-shade polariscope, Zeiss saccharimeter, spectroscope, refractometer; microscopes: Bausch & Lomb, Spencer, Leitz, etc.; balances: analytical, prescription, counter, solution, torsion, specific gravity, etc.; hydrometers, Beaume and specific gravity, single and in sets; lactometers, urinometers, alcoholometers, etc.; microtomes, nitrometers, combustion furnaces; Bunsen burners, various patterns; pharmaceutical stills, apparatus for fractional distillation and evaporation in vacuo, tablet machines, suppository molds and presses, drug mills, special percolators and apparatus for hot and cold extraction, continuous extractors, pill machines, coaters, etc.

Courses of Study.

The School of Pharmacy offers three complete courses of study, one of two years and one of three years—both leading to the degree of pharmaceutical chemist—and one of four years leading to the degree of bachelor of science.

The Two-year Course. This is the regular course in pharmacy, first established by an act of the legislature, which leads to the degree of pharmaceutical chemist (Ph. C.) The curriculum is confined to pharmaceutical subjects, and prepares directly for drug-store and dispensing work. The higher work of the other courses gives greater breadth of training, and prepares students for service with larger concerns and with manufacturing chemists.

The Three-year Course. The committee appointed by the Kansas Pharmaceutical Association to report on the School of Pharmacy recommended that the school inaugurate a *three-year course*, so that students who so desire could distribute their pharmaceutical education over this period of time. This course should especially appeal to those students who have had no drug-store experience, and to those who desire to avail themselves of the social advantages offered to college students. By special arrangement with the State Board of Pharmacy, graduates of this course may become registered pharmacists without examination upon the completion of one year of practical experience in a drug-store. The course leads to the degree of Ph. C., and, besides the diploma, a special certificate of proficiency is issued by the Dean upon the completion of the course of study outlined.

The Four-year Course. This course, leading to the degree of bachelor of science in pharmacy, from which the student graduates on a plane with the regular students of The College, opens the door, as does the bachelor of arts degree, to the degree of master of arts or doctor of philosophy, should the student desire to pursue his studies to that extent, and thus prepare himself for the higher calling of educational work.

Two-year Course

Leading to the Degree of Pharmaceutical Chemist.

JUNIOR YEAR.

First Term :

Descriptive Pharmacy, (*a* and *b*), at 9. Mr. Havenhill.

Pharmacal Botany, (*a*), 10:15 to 12:15. Mr. Sterling.

Physical Manipulation, (*b*), 10:15 to 12:15. Mr. Havenhill.

Introductory Chemistry, (*a* and *b*), 1:30 to 3:30. Professor Bartow.

Pharmacognosy, (*b*), at 3:30. Mr. Havenhill.

Second Term :

Systematic Botany, (*b*), 8 to 10. Mr. Sterling.

Pharmacognosy, (*a*), at 10:15. Mr. Havenhill.

Inorganic Medicinal Salts, (*b*), at 10:15. Mr. Havenhill.

Galenical Preparations, (*a* and *b*) 1:30 to 3:30. Mr. Havenhill and Mr. Emerson.

Qualitative Analysis, (*a* and *b*), 3:30 to 5:30. Mr. McFarland.

SENIOR YEAR.

First Term :

Vegetable Histology and Microchemical Technique, (*a*), 8 to 10. Mr. Sterling.

Microscopical Study of Drugs, (*b*), 8 to 10. Mr. Sterling.

Organic Materia Medica and Pharmaceutical Chemistry, (*a* and *b*), at 10:15. Professor Sayre.

Pharmaceutical Testing, (*a*), 1:30 to 3:30. Professor Sayre and Mr. Havenhill.

Elementary Mineralogy, (*b*), 1:30 to 3:30. Professor Haworth.

Quantitative Analysis, (*a*), 3:30 to 5:30. Professor Bailey.

Physiological Chemistry, (*b*), 3:30 to 5:30. Professor Sayre and Mr. Emerson.

Second Term :

Dispensing, (*a*), 8 to 10. Professor Sayre and Mr. Emerson.

Thesis, (*b*), 8 to 10. ———

Pharmacology, (*a* and *b*), Monday, Tuesday, Wednesday, and Thursday, at 11:15. Professor Sayre.

Toxicology, (*a* and *b*), Friday, at 11:15. Professor Bailey.

Organic Chemistry, (*a* and *b*), 3:30 to 5:30. Professor Bartow.

Plant Analysis, (*a*), 1:30 to 3:30. Professor Sayre and Mr. Havenhill.

Physiology, (*b*), 1:30 to 3:30. Professor Hyde.

Three-year Course.

Leading to the Degree of Pharmaceutical Chemist.

SOPHOMORE YEAR.

First Term :

- Descriptive Pharmacy, (*a* and *b*), at 9. Mr. Havenhill.
- Physical Manipulation, (*b*), 10:15 to 12:15. Mr. Havenhill.
- Introductory Chemistry, (*a* and *b*), 1:30 to 3:30. Professor Bartow.

Second Term :

- Inorganic Medicinal Salts, (*b*), at 10:15. Mr. Havenhill.
- Elementary Structural Botany, (*a* and *b*), 1:30 to 3:30. Professor Stevens and Mr. Sterling.
- Qualitative Analysis (*a* and *b*), 3:30 to 5:30. Mr. McFarland.

JUNIOR YEAR.

First Term :

- Vegetable Histology and Microchemical Technique, (*a*), 8 to 10. Mr. Sterling.
- Rhetoric and English Composition, (*a* and *b*), at 10:15. Miss Lynn.
- Elementary Mineralogy, (*b*), 1:30 to 3:30. Professor Haworth.
- Quantitative Analysis, (*a*), 3:30 to 5:30. Professor Bailey.
- Pharmacognosy, (*b*), at 3:30. Mr. Havenhill.

Second Term :

- Practical Exercises, (*b*), 8 to 10. Mr. Havenhill.
- Pharmacognosy, (*a*), at 10:15. Mr. Havenhill.
- Galenical Preparations, (*a* and *b*), 1:30 to 3:30. Mr. Havenhill and Mr. Emerson.
- Organic Chemistry, (*a* and *b*), 3:30 to 5:30. Professor Bartow.

SENIOR YEAR.

First Term :

- Microscopical Study of Drugs, (*b*), 8 to 10. Mr. Sterling.
- Organic Materia Medica and Pharmaceutical Chemistry, (*a* and *b*), at 10:15. Professor Sayre.
- Library Work, (*a*). Hours by appointment. Professor Sayre.
- Pharmaceutical Testing, (*a*), 1:30 to 3:30. Professor Sayre and Mr. Havenhill.
- Physiological Chemistry, (*b*), 3:30 to 5:30. Professor Sayre and Mr. Emerson.

Second Term :

- Dispensing, (*a*), 8 to 10. Professor Sayre and Mr. Emerson.
- Thesis, (*b*), 8 to 10. ———

Pharmacology, (*a* and *b*), Monday, Tuesday, Wednesday, and Thursday, at 11:15. Professor Sayre.

Toxicology, (*a* and *b*), Friday, at 11:15. Professor Bailey.

Plant Analysis, (*a*), 1:30 to 3:30. Professor Sayre and Mr. Havenhill.

Physiology, (*b*), 1:30 to 3:30. Professor Hyde.

Four-year Course.

Leading to the Degree of Bachelor of Science.

FRESHMAN YEAR.

First Term :

Rhetoric and English Composition, (*a* and *b*), at 9. Miss Lynn.

Algebra and Trigonometry, (*a* and *b*), at 11:15. Mr. Ashton.

Introductory Chemistry, (*a* and *b*), 1:30 to 3:30. Professor Bar-tow.

Second Term :

Analytic Geometry, (*a* and *b*), at 8. Professor Newson.

Elementary Structural Botany, (*a* and *b*), 1:30 to 3:30. Professor Stevens and Mr. Sterling.

Qualitative Analysis, (*a* and *b*), 3:30 to 5:30. Mr. McFarland.

SOPHOMORE YEAR.

First Term :

General Physics, (*a* and *b*), at 9. Mr. Rice.

German, Preparatory to Scientific German, (*a* and *b*), at 10. Professor Carruth.

Quantitative Analysis, (*a* and *b*), 3:30 to 5:30. Professor Bailey.

Second Term :

Scientific German, (*a* and *b*), at 8. Mr. Engel.

Physical Measurements and Methods, (*a* and *b*), 1:30 to 3:30. Mr. Rice.

Bacteriology, (*a* and *b*), 3:30 to 5:30. Professor Barber.

JUNIOR YEAR.

First Term :

Descriptive Pharmacy, (*a* and *b*), at 9. Mr. Havenhill.

Scientific French, (*a* and *b*), at 11:15. Mr. Lincoln.

Vegetable Histology, (*a* and *b*), 1:30 to 3:30. Professor Stevens and Miss Wise.

Pharmacognosy, (*b*), at 3:30. Mr. Havenhill.

Second Term :

Pharmacognosy, (*a*), at 10:15. Mr. Havenhill.

Inorganic Medicinal Salts (*b*), at 10:15. Mr. Havenhill.

Galenical Preparations, (*a* and *b*), 1:30 to 3:30. Mr. Havenhill and Mr. Emerson.

SENIOR YEAR.

First Term:

Vegetable Histology and Microchemical Technique, (*b*), 8 to 10. Mr. Sterling.

Organic Materia Medica and Pharmaceutical Chemistry, (*a* and *b*), at 10:15. Professor Sayre.

Pharmaceutical Testing, (*a*), 1 to 3. Professor Sayre and Mr. Havenhill.

Elementary Mineralogy, (*b*), 1:30 to 3:30. Professor Haworth.

Physiological and Medicinal Chemistry, (*a* and *b*), 3:30 to 5:30. Professor Sayre and Mr. Emerson.

Second Term:

Dispensing, (*a*), 8 to 10. Professor Sayre and Mr. Emerson.

Thesis, (*b*), 8 to 11:15. ———.

Pharmacology, (*a* and *b*), Monday, Tuesday, Wednesday, and Thursday, at 11:15. Professor Sayre.

Toxicology, (*a* and *b*), Friday, at 11:15. Professor Bailey.

Organic Chemistry, (*a* and *b*), 3:30 to 5:30. Professor Bartow.

Plant Analysis, (*a*), 1:30 to 3:30. Professor Sayre and Mr. Havenhill.

Physiology, (*b*), 1:30 to 3:30. Professor Hyde.

Courses of Instruction.

BOTANY AND PHARMACOGNOSY.

Professor STEVENS.

Professor SAYRE.

Associate Professor BARBER.

Assistant Professor STERLING.

Assistant Professor HAVENHILL.

Miss WISE.

I.—PHARMACAL BOTANY. An introduction to the morphology and taxonomy of phanerogams. Laboratory work, recitations, and lectures. Junior, 1st term, (*a*), 10:15 to 12:15. Mr. Sterling.

II.—SYSTEMATIC BOTANY. A brief introduction to cryptogams and the use of manual. Laboratory work, recitations, and lectures. Junior, 2d term, (*b*), 8 to 10. Mr. Sterling.

III.—ELEMENTARY STRUCTURAL BOTANY. A study of the structure of phanerogams, with a brief introduction to fungi, algæ, mosses, and ferns. The use of a manual; field-studies. Laboratory work and lectures. 2d term (*a* and *b*), 1:30 to 3:30. Professor Stevens, Mr. Sterling and Miss Wise.

IV.—VEGETABLE HISTOLOGY AND MICROCHEMICAL TECHNIQUE. A study of vegetable tissues and products. Open to students who have had course III or courses I and II. Laboratory and lectures. Senior, 1st term, (*a*), 8 to 10. Mr. Sterling.

V.—VEGETABLE HISTOLOGY. A study of plant tissues with special reference to their development and functions; histological technique. Laboratory work and lectures. Open to students who have taken course III. 1st term, (*a* and *b*), 1:30 to 3:30. Professor Stevens and Miss Wise.

VI.—MICROSCOPICAL STUDY OF VEGETABLE DRUGS. A study of the structural characteristics of the official drugs; the preparation of specimens and the analysis of powdered drugs. Open to students who have had course IV or V. Laboratory work and lectures. 1st term, (*b*), 8 to 10. Professor Sayre and Mr. Sterling.

VII.—BACTERIOLOGY. Bacteriological technique. Pathogenic bacteria and other forms of economic importance. Laboratory work, reading, and lectures. 2d term, (*a* and *b*), 3:30 to 5:30. Professor Barber.

VIII.—PHARMACOGNOSY. A study of the geographical distribution, origin and physical characteristics of crude drugs. Lectures,

recitations, and laboratory work. Junior, 1st term, (*b*), at 3:30. Mr. Havenhill.

IX.—PHARMACOGNOSY. A continuation of course VIII, and should be preceded by it. Lectures, recitations, and laboratory work. Junior, 2d term, (*a*), at 10:15. Mr. Havenhill.

X.—PLANT ANALYSIS. The separation and estimation of the proximate principles of plant drugs. Must be preceded by course XXI. 2d term, (*a*), 1:30 to 3:30. Professor Sayre and Mr. Havenhill.

XI.—ADVANCED PLANT ANALYSIS. The separation of the alkaloidal and glucosidal principles of plants, and their identification by physical and chemical means. Required in the three- and the four-year courses. Senior, 2d term, (*a*), 3:30 to 5:30. Mr. Havenhill.

XII.—DRUG ASSAYING. Advanced work in standardization of crude drugs and their preparation, and the valuation of chemicals.

XIII.—PLANT ANALYSIS. A systematic course of advanced work in the analysis of the chemical constituents of plants.

XIV.—ANALYSIS OF NOSTRUMS. Determination of composition of articles with secret formulas.

CHEMISTRY.

Professor BAILEY.

Professor SAYRE.

Associate Professor BARTOW.

Assistant Professor HAVENHILL.

Assistant Professor MCFARLAND.

Mr. EMERSON.

I.—INTRODUCTORY CHEMISTRY. A study of the chemical elements and their compounds. Experimental lectures, recitations, and laboratory work. Junior, 1st term, (*a* and *b*), 1:30 to 3:30. Professor Bartow and assistants.

II.—QUALITATIVE ANALYSIS. The isolation and identification of the important elements from mixtures and compounds. Text-book. Bailey and Cady's Guide to the Study of Qualitative Analysis. Must be preceded by course I. Lectures and laboratory work. Junior, 2d term, (*a* and *b*), 3:30 to 5:30. Mr. McFarland.

III.—QUANTITATIVE ANALYSIS. A course especially adapted to the needs of the pharmacist, involving the simpler methods of gravimetric and volumetric analysis. Lectures and laboratory work. Must be preceded by course II. Senior, 1st term, (*a*), 3:30 to 5:30. Professor Bailey and assistant.

IV.—QUANTITATIVE ANALYSIS. A course similar to course III, extending over a whole term. 1st term, (*a* and *b*), 3:30 to 5:30. Professor Bailey and Assistant.

V.—ORGANIC CHEMISTRY. A study of the hydrocarbons and their derivatives. Lectures and recitations, Monday, Wednesday, and Friday; laboratory work, Tuesday and Thursday. Must be preceded by course I. Senior, 2d term, (*a* and *b*), 3:30 to 5:30. Professor Bartow and assistant.

VI.—PHARMACEUTICAL TESTING. Practical demonstrations and detail work in the detection of adulteration in medicinal chemicals. Laboratory work and lectures. Must be preceded by course II. Senior, 1st term, (*a*), 1:30 to 3:30. Professor Sayre and Mr. Havenhill.

VII.—PHYSIOLOGICAL CHEMISTRY. A brief course adapted to the needs of the pharmacist, including the study of the carbohydrates, proteins, normal and abnormal products of animal life. Analysis of various secretions, urinalysis, etc. Laboratory work and lectures. Must be preceded by course I. Senior, 1st term, (*b*), 3:30 to 5:30. Professor Sayre and Mr. Emerson.

VIII.—PHYSIOLOGICAL AND MEDICAL CHEMISTRY. This course is offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. 1st term, four days a week, 3:30 to 5:30. Professor Sayre and Mr. Emerson.

IX.—ADVANCED WORK IN PHYSIOLOGICAL CHEMISTRY. Analysis of such dietetics as are used in medicine and the quantitative estimation of digestive ferments; the preparation of proximate constituents from animal tissues. Must be preceded by course VIII, and is open to all students who have passed that subject. Professor Sayre and Mr. Emerson.

ENGLISH.

Assistant Professor LYNN.

I.—RHETORIC AND ENGLISH COMPOSITION. Outlines of rhetoric, with exercises and themes. Required of all Freshmen in the School of Pharmacy. 1st or 2d term, daily: 1st term, at 8, 9, 4:30, and at other hours to be arranged; 2d term, at 8, 9, 2:30, and at other hours to be arranged. Miss Lynn.

FRENCH.

Assistant Professor LINCOLN.

Assistant Professor LE DUC.

Assistant Professor BASSETT.

I.—ELEMENTARY COURSE. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation and in forms. 1st term. Five divisions. Daily, at 8, 9, 10:15, 11:15, or 1:30. Mr. Lincoln, Miss Le Duc, or Mr. Bassett. Prerequisite: Three years of Latin or three years of German.

II.—ELEMENTARY COURSE. A continuation of course I. Reading of simple prose texts, with exercises in dictation and elementary composition. 2d term. Four divisions. Daily, at 8, 9, 11:15, or 1:30. Professor Galloo, Mr. Lincoln, Miss Le Duc, or Mr. Bassett.

III.—SCIENTIFIC FRENCH. Introduction to the vocabulary and styles of works on the mathematical, physical and biological sciences. Required of all four-year pharmacy students. Freshman. 1st term, daily, at 11:15. Mr. Lincoln.

GERMAN.

Assistant Professor ENGEL.

Assistant Professor CORBIN.

Mr. ERICH MÜNTER, Instructor.

Mrs. CAROLINE B. SPANGLER, Teaching Fellow.

I.—OUTLINE OF GRAMMAR. The first twenty-four lessons of Otis, with composition exercises. Carruth's Reader, about fifty pages. 1st term, daily, at 8, 9, 11:15, and 2:30. Mr. Engel, Miss Corbin, and Mr. Münter.

II.—CARRUTH'S READER, completed, ZSCHOKKE, KLEIST, HEYSE (100 pp.), and SCHILLER'S WILHELM TELL, complete. Also special exercise on case government and auxiliary verbs (Otis, lessons 25-37), and sight-reading. 2d term, daily, at 8, 9, 11:15, and 2:30. Mr. Engel, Miss Corbin, and Mr. Münter.

III.—(1) LESSING'S MINNA VON BARNHELM. Geschichte des 30-jährigen Krieges. Outline of German literature in dictations and lectures. Sight-reading. 1st term, daily, at 8, 9, 11:15, and 3:30. Mr. Engel, Miss Corbin, and assistant.

MATHEMATICS.

Associate Professor NEWSON.

Assistant Professor VAN DER VRIES.

Assistant Professor ASHTON.

I.—(a) ALGEBRA. Quadratic equations, radicals, exponents, fundamental principles of logarithms, and use of logarithmic tables. Wentworth's College Algebra, revised. 1st half-term.

(b) SOLID GEOMETRY, Wentworth's Geometry; or PLANE TRIGONOMETRY, Miller's Trigonometry. 2d half-term. Both terms. 1st term at 2:30, Mr. Ashton; 2d term at 8, Mr. Ashton.

II.—ANALYTIC GEOMETRY. Elements of plane analytics, including the geometry of the conic sections, and an introduction to solid analytics. Tanner and Allen's Analytic Geometry or Ashton's Analytic Geometry. Both terms. 1st term at 8 and 4:30; 2d term at 10:15 or 3:30. Professor Newson, Mr. Van der Vries, and assistant.

MINERALOGY.

Professor HAWORTH.

I.—ELEMENTARY MINERALOGY. An abridgement of course I, the College, including principally crystallography, blowpipe analysis, and a study of ores. 1st term, (b), 1:30 to 3:30. Professor Haworth.

PHARMACY AND MATERIA MEDICA.

Professor SAYRE.

Professor BAILEY.

Assistant Professor HAVENHILL.

Mr. EMERSON.

I.—DESCRIPTIVE PHARMACY. Introduction to the subject of pharmacy, including weights, measures, and specific gravity; the apparatus and processes used in the preparation of medicines, and a systematic study of the classes of official preparations. Lectures and recitations. Junior, 1st term, (a and b), at 9. Mr. Havenhill.

II.—PHYSICAL MANIPULATION. A brief review of the principles of physics relating to pharmacy, and the construction, methods of standardizing and use of the various instruments employed in testing the strength and purity of the official substances. Lectures, recitations, and laboratory work. Junior, 1st term, (b), 10:15 to 12:15. Mr. Havenhill.

III.—GENERAL PREPARATION. Practical work in the manufacture of standard medicinal preparations, as contained in the pharmacopœia and national formulary. Laboratory work. Must be preceded by courses I and II. Junior, 2d term, (a and b), 1:30 to 3:30. Mr. Havenhill and Mr. Spencer.

IV.—INORGANIC MEDICINAL SALTS. The source, manufacture, physical properties, general and specific characteristics and identity of inorganic substances used in medicine. Lectures, recitations, and laboratory work. Must be preceded by Introductory Chemistry. Junior, 2d term, (b), at 10:15. Mr. Havenhill.

V.—ORGANIC MATERIA MEDICA AND PHARMACEUTICAL CHEMISTRY. Classification, physical description, chemical constitution of

the crude drugs of the pharmacopœias; critical review of the preparations of the U. S. Pharmacopœia; methods of identification; tests for impurities and detection of adulterations occurring in medicinal salts; organic, inorganic and synthetical remedies. Lectures and recitations. Senior, 1st term, (*a* and *b*), at 10:15. Professor Sayre.

VI.—PHARMACOLOGY. The chemical and physiological properties of drugs, therapeutical application, methods of prescribing and dispensing, the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Senior, 2d term, (*a* and *b*), Monday, Tuesday, Wednesday, and Thursday, at 11:15. Professor Sayre.

VII.—TOXICOLOGY. Lectures on the sources, properties, methods for detection and antidotes for poisons. Must be preceded by introductory chemistry. Senior, 2d term, (*a* and *b*), Friday, at 11:15. Professor Bailey.

VIII.—DISPENSING. Compounding of prescriptions and a practical study of incompatibilities. Lectures and laboratory work. Senior, 2d term, (*a*), 8 to 10. Professor Sayre.

IX.—THESIS. Original research in one of the subjects connected with the pharmaceutical profession. An outline of the work should be presented to the Dean by the middle of the second term. Senior, 2d term, (*b*), 8 to 11:15.

X.—LIBRARY WORK. Specially designed to familiarize the student with pharmaceutical literature; will include exercises in indexing and reviewing various topics. 2d term, (*a*), hours by appointment. Professor Sayre.

XI.—PRACTICAL EXERCISES. These will include the care of the prescription room, stock-taking, etc. Must be preceded by courses I and IV, and pharmacognosy. 2d term, (*b*), 8 to 10. Mr. Havenhill.

XII. Manufacture of artificial fruit essences and other compound ethers.

XIII.—PHARMACEUTICAL JURISPRUDENCE. Relating to the laws pertaining to pharmacy in different states, and to the laws pertaining to the mercantile business, together with practical business suggestions. A course of not less than ten lectures, given in connection with the Pharmaceutical Society. Hours by appointment. Professor Higgins.

XIV.—PHARMACY AND PHARMACOGNOSY. A special course designed to meet the needs of medical students, comprising weights, measures and processes used in the preparation of medicines; the geographical distribution, physical properties, and identification of crude drugs. Lectures, recitations, and laboratory work. 1st term, (*b*), 1:30 to 3:30. Mr. Havenhill.

PHYSICS.

Assistant Professor RICE.

I.—INTRODUCTORY PHYSICS. Recitations and laboratory. 2d term, daily, 10:15 to 12:15. Mr. Rice.

Prerequisites: Algebra and plane geometry.

II.—GENERAL PHYSICS. Experimental lectures and recitations. 1st term, daily, at 9. Mr. Rice.

Prerequisites: Physics I, or equivalent, and plane trigonometry.

III.—PHYSICAL MEASUREMENTS AND METHODS. A laboratory course, to follow physics II. 2d term, daily, 1:30 to 3:30. Mr. Rice.

Prerequisites: Physics II, or equivalent, and plane trigonometry.

PHYSIOLOGY.

Associate Professor HYDE.

I.—PHYSIOLOGY. A brief course in physiology. Lectures and recitations, with demonstrations, based upon the essential structures and functions of the human body, are supplemented twice a week by practical work in the laboratory. The treatment of emergency cases, observations on the action of drugs upon tissues, the relation of the different organs and bones to each other and the structure of the chief tissues are some of the subjects undertaken by each student. Text-book, Martin's Briefer Courses in Human Physiology, revised by Doctor Fitz. Senior, 2d term, (b), 1:30 to 3:30. Professor Hyde.

VII. The School of Medicine.

Faculty.

FRANK STRONG, PH. D., President.

CLARENCE E. MCCLUNG, PH. D., Acting Dean. Associate Professor of Zoölogy.

EDGAR H. S. BAILEY, PH. D., Professor of Chemistry.

LUCIUS E. SAYRE, PH. M., Professor of Pharmacy.

JAMES NAISMITH, A. B., M. D., Associate Professor and Instructor in Physical Diagnosis.

MARSHALL A. BARBER, A. M., Associate Professor of Bacteriology.

EDWARD BARTOW, PH. D., Associate Professor of Chemistry.

IDA H. HYDE, PH. D., Associate Professor of Physiology.

GEORGE H. HOXIE, A. M., M. D., Associate Professor of Anatomy.

HAMILTON P. CADY, PH. D., Assistant Professor of Chemistry.

L. D. HAVENHILL, B. S., PH. M., Assistant Professor of Pharmacy.

M. W. BLACKMAN, A. M., Instructor in Histology and Pathology.

ROBERT S. MAGEE, M. D., Lecturer on Pathology.

EUGENE SMITH, M. D., Demonstrator in Anatomy.

HERBERT W. EMERSON, B. S., PH. C., Instructor in Pharmacy.

CARL F. GUSTAFSON, A. M., Assistant in Chemistry.

Purposes of the School.

The course in medical studies at present offered by the University of Kansas covers the first two years of the four-year course now required in most of the medical colleges of the United States. None of the strictly professional or clinical branches are given, and no attempt will be made to offer these until a hospital has been established and all the other necessary facilities for thorough and satisfactory work in such branches have been provided. Of the so-called scientific branches, however, all are given that are usually taught in the best medical colleges of this country during the first two years of the course. The work in these branches is exceptionally thorough and complete, the time devoted to them being seventy-two weeks, as compared with about fifty weeks in the usual medical courses.

Degrees.

The course in the School of Medicine leads to a certificate of completion of the course.

Equipment.

Practically the whole scientific equipment of the University is at the disposal of the students of the School of Medicine.

The greater part of the work is in the laboratory, with recitations and assigned readings, the lectures being supplementary only. For this reason special attention has been given to equipping the laboratories, where the student spends the larger part of his time. The physiological laboratory is supplied with a set of apparatus for the use of each student. In the laboratories of bacteriology, histology, and embryology, each student is provided with a microscope and other apparatus for his exclusive use. In the various courses in chemistry, the equipment is adequate for thorough individual work; while the well-established School of Pharmacy offers exceptional facilities to the student of medicine.

The completion of the new Museum Building affords commodious laboratories for histology, pathology, bacteriology and embryology in Snow Hall, which was refitted during the summer of 1903 at large expense. The old chemistry building is devoted to human anatomy and physiology, and was also refitted during the Summer of 1903. Its half-dozen laboratories now afford large facilities for work in physiology and anatomy. All the work in chemistry is done in the Chemistry Building. This arrangement will provide, altogether, fifteen separate and large laboratories for the use of the medical students.

Admission.

There are two methods of admission to the School of Medicine; first, by examination; second, by certificate.

By Examination. Students who cannot present certificates from accredited schools will be examined in the subjects required for admission at the times and place of examination, indicated on page 66 of this catalogue, under the College. Subjects upon which the candidate will be examined are given below.

By Certificate. Nearly all students enter the School of Medicine on certificates from high schools, academies, or other preparatory schools. The method of accrediting by certificate is the same as that in the College as noted on page 67.

Graduates of state normal schools, or of high schools or academies outside of the state of Kansas, whose credits are accepted by another state university, may be admitted under the same condition.

Number of Units Required. The time value of each study is stated in units, a unit meaning one high-school study pursued daily for at least thirty-five weeks. A total of thirteen units is required for entrance. A student may be conditioned in not more than two units.

Subjects Required for Admission.

Required Specifically. *Six units:* English, two units; algebra, one unit; Latin, one unit; physics, one unit; history, one unit.

Optional. *Seven units must be chosen:* Latin (second year), one unit; German, one unit; French, one unit; Greek, one unit; chemistry one unit; botany, one unit; zoölogy, one unit; geometry, one unit; algebra (advanced), one unit; trigonometry, one unit; astronomy, one unit.

Detailed List. A detailed description of the work to be done in connection with the subjects named above will be found under The College, page 69.

Expenses.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering the School of Medicine. All students are required to pay an incidental fee of thirty dollars. Non-residents of Kansas must pay a matriculation fee of ten dollars and an incidental fee of fifty dollars. If the student so elects, one-half of the incidental fee may be paid at the beginning of each term.

For further information, see pages 83, 84.

Certificates.

To all students who satisfactorily complete the studies of the two-year course a certificate of proficiency will be given, showing the amount and character of the work. This certificate will now be accepted in most of the colleges of the United States as satisfactory evidence of the completed work of the first two years of a four-year course, admitting the student to the third year, providing the student has completed the first two years of a collegiate course in addition. This school will rigidly comply with the requirements of the regents of the University of the State of New York for the accredited schools of the second class. No certificate of credits will be given except for work done in regular course in the School of Medicine, and no advanced standing will be given except to students from reputable colleges of medicine. See page 264.

Courses of Study.

There are, therefore, two courses of study offered to students intending to become physicians.

1. A two-year course, at the completion of which a certificate of proficiency is given admitting the student into other medical schools.

2. A four-year course leading to the degree of bachelor of arts in medicine.

Wherever it is possible, the student is earnestly advised to pursue the longer course, one which will give him that preparation in the natural sciences and modern languages now almost indispensable to the practitioner of medicine. This course, by combining the work of the first two years of the medical curriculum with his Freshman and Sophomore studies, will enable the student to acquire both the B. A. and M. D. degrees in six years. It is the intention of the University, as soon as possible, to require of all students such preparation. Meanwhile, the shorter course of two years is offered for those unable to take the longer one.

Two-year Course.

FIRST YEAR.

First Term :

Anatomy (Anatomy I), 1st two-fifths of term, daily, at 11:15.

Professor Hoxie and assistant.

Myology (Anatomy I), last three-fifths of term, at 11:15. Professor Hoxie.

Osteology (Anatomy II), (α), daily, at 8. Dr. Smith.

Chemistry (Chemistry I), 1:30 to 3:30, daily. Professor Bartow and assistant.

Histology (Zoölogy I), 3:30 to 5:30, daily. Mr. Blackman.

Second Term :

Anatomy (Anatomy IV, VI), 8 to 12:15, daily. Professor Hoxie and Dr. Smith.

Bacteriology (Botany I), 1:30 to 3:30, daily. Professor Barber.

Chemistry (Medical Chemistry III), 3:30 to 5:30, daily, Mr. Cady; or (Medical Chemistry II), 3:30 to 5:30, daily. Professor Bartow and assistant.

SECOND YEAR.

First Term :

Anatomy (Anatomy V), 8 to 12:15, (*a*) daily. Professor Hoxie.
Regional Anatomy and Physical Diagnosis (Anatomy VIII and IX), 1:30 to 3:30, (*a*), daily. Professor Naismith.

Physiology (Physiology I), 8 to 12:15; (*b*), daily. Professor Hyde.

Pharmacy and Pharmacognosy (Pharmacy I), 1:30 to 3:30, (*b*), daily. Mr. Havenhill.

Physiological Chemistry (Pharmacy III), 3:30 to 5:30, daily. Professor Sayre and Mr. Emerson.

Second Term :

Physiology (Physiology I), 8 to 11:15, daily. Professor Hyde.

Materia Medica (Pharmacy II), 11:15 to 12:15, except Friday. Professor Sayre.

Toxicology (Chemistry IV), 11:15 to 12:15, Friday. Professor Bailey.

Pathology (Zoölogy III), 1:30 to 3:30, daily. Dr. Magee and Mr. Blackman.

Embryology (Zoölogy II), 3:30 to 5:30, (*b*), daily. Professor McClung.

Four-year Course.

For entrance requirements, see admission to the College, page 68.

Wherever it is possible, the student is advised to take the work for the B. A. degree in medicine, and for such the following course is recommended. (The courses named may be found under The College courses of Instruction.)

FRESHMAN YEAR.

First Term :

French or German, Rhetoric I, Mathematics I, Hygiene, Physical Education.

Second Term :

French or German, Botany I or Zoölogy III or Physics I, Chemistry I, Physical Education.

SOPHOMORE YEAR.

First Term :

French or German, Zoölogy I or Botany II or Physics II, Chemistry II, Physical Education.

Second Term :

French or German or Greek, Botany I or Zoölogy III or Physics, Chemistry III.

JUNIOR YEAR.

First Term :

Psychology I, Anatomy I and II, Histology (Zoölogy V), Forensics.

Second Term :

Anatomy IV, VI, Chemistry XII, Zoölogy VI.

SENIOR YEAR.

First Term :

Anatomy V, Physiology I, Physiological Chemistry.

Second Term :

Physiology I, Bacteriology, Embryology (Zoölogy VII).

Those entering with acceptable botany, zoölogy or chemistry should take the advanced course in the Freshman and Sophomore years, but it is recommended that not more than one term's work be had in each of the subjects, in addition to botany and chemistry. Physics must not be omitted. Those who enter with neither German nor French should pursue one or the other of these languages, preferably the former, during the whole, or the most, of the Freshman and Sophomore years; those who enter with preparation in either of these languages should seek to become as proficient as possible in both.

Degree of Bachelor of Arts in Medicine.

Any student who has completed the work of the sophomore year in the College, or of any other university or college doing equivalent work, will be given the degree of bachelor of arts in medicine upon the completion of the course in the Junior and Senior years of the subjoined curriculum, and enough additional work to make twenty-four terms. The student is permitted to apply towards this degree all the work of the two-year course except materia medica, pharmacology, and pathology—that is, ten terms' work in all.

Courses of Instruction.

ANATOMY.

Associate Professor HOXIE.

Associate Professor NAISMITH.

Doctor SMITH.

EQUIPMENT.

The department occupies the entire lower floor of Medical Hall. The dissecting rooms will accommodate 100 students, are well lighted by windows and electricity, and are provided with steam heat and cement floors. They are, therefore, thoroughly washable. Besides the dissecting rooms, the department has a study room, two store-rooms and an office. The material for study is preserved in formalin-glycerin solutions, and is of natural consistency, and odorless. The department is constantly adding to its supply of models and reference-books, so that the student is never at a loss because of a lack of such helps.

ADVICE AS TO CHOICE OF COURSES.

Medical students will, of course, take all the required courses, and in the order given. The plan is to provide the student with a general theoretical knowledge of the body and a detailed knowledge of the bones before he begins dissecting. The latter begins at the second quarter, and thenceforward the theoretical and practical studies go on simultaneously. It is recommended that students intending to take up anatomy obtain some knowledge of Latin- and Greek-word structure, as well as a reading knowledge of at least German, before beginning the study.

I.—GENERAL ANATOMY. A series of lectures introductory to the medical course as well as to the study of anatomy. It considers briefly the history of medicine, the relation of the medical sciences, and then the development and structure of the body. Daily, at 11:15, from the beginning of the first term. Required, two-fifths term. Professor Hoxie.

II.—OSTEOLOGY. A study of the bones and joints by recitation and drawing. Daily, first year, 1st term, first half, at 8. Each student is provided with at least a lateral half of a disarticulated skeleton for home study. Cunningham's text-book of Anatomy is used for the recitations. Required, one-half term. Doctor Smith.

III.—MYOLOGY. A daily recitation on the muscles, at 11:15, following course I. This course is intended to gather up into a sys-

tematic arrangement the work of dissection at this period. Text-book, Cunningham. Three-fifths term required. Professor Hoxie.

IV.—ANGIOLOGY AND ORGANOLOGY. A text-book study of the vascular systems and the organs of the body. Daily at 11:15. Required of first-year medical students. Text-book, Cunningham. One term. Professor Hoxie.

V.—NEUROLOGY. A laboratory and text-book study of the nervous system and special senses. Daily, from 8 to 12:15, first half of the 1st term. Required of second-year medical students. Credit, one term. Professor Hoxie.

VI.—DISSECTION. Daily from 8 to 12:15. The body is divided into four parts: head, trunk, arm, and leg; and each student is required to dissect one lateral half. The cost of the material for this work is usually \$2.50 a part, hence where two students work together the total cost of material will be five dollars. Upon the completion of one part, the student may not undertake another till he has passed a satisfactory examination of the work already done. Required of all medical students, credit two terms. Professor Hoxie and Doctor Smith.

VII.—TOPOGRAPHICAL STUDIES. The relation of anatomical structures as revealed by the study of serial cross-sections. Each part may be studied by itself, but only after the student has dissected that part. Elective and by appointment. Credit for each part, when dissected and drawn, one-half term. Professor Hoxie.

VIII.—TOPOGRAPHICAL ANATOMY. Topography of the cranium, the thorax, and the abdomen, illustrated on the living model and verified on the cadaver. Daily, at 1:30, for three weeks, 1st term, (a). Professor Naismith.

IX.—PHYSICAL DIAGNOSIS. Principles and methods of physical diagnosis; practice in inspection, palpation, percussion and auscultation of the normal body, so that the conditions and sounds in health may be familiar to the student; abnormal cases will be introduced for comparison. The class will work in sections in the examining room. The methods used will be similar to those used in life insurance and army examinations. Daily, at 1:30, for six weeks, 1st term, (a). Professor Naismith.

BOTANY.

Professor BARBER.

I.—BACTERIOLOGY. Bacteriological technique. Pathogenic bacteria and other forms of economic importance. Laboratory work ten hours a week; reading and lectures. 2d term, daily, 1:30 to 3:30 Professor Barber. This is course VIII, The College.

CHEMISTRY.

Professor BAILEY.

Associate Professor BARTOW.

Assistant Professor CADY.

For equipment, see under the College, page 99.

I.—GENERAL CHEMISTRY. Laboratory work three afternoons each week, and lectures two afternoons, from 1 to 3. In this course special attention is given to the development of the laws that underlie the theories of chemistry, and those theories are illustrated by a study of the simpler elements. This is followed by a study of the combination of the elements. The course with the non-metallic elements is followed by a careful study of the metals, including their source, methods of preparation, properties, uses, and the uses of the compounds in the arts and in medicine. The study of methods for writing reactions and of chemical problems is carried on in connection with the daily lectures and recitations. In the laboratory work, the student first learns the simpler problems of chemical manipulation, then the practical methods of preparing the ordinary elements, and afterwards of the acids, ammonia, etc. Frequent recitations are held, in order to show the proficiency of the student, and a final examination determines his knowledge of the whole subject. Text-book, Remsen's Chemistry. 1st term, daily, 1:30 to 3:30. Professor Bartow and assistant.

II.—ORGANIC CHEMISTRY. (Same as course XII, The College.) Lectures and recitations three times per week. The course in organic chemistry is a continuation of the course in general chemistry. The lectures will treat of the occurrence, methods of preparing and the properties of the various classes of organic compounds; as, the hydrocarbons, alcohols, ethers, aldehydes, sugars, starches, etc. 2d term, daily, 3:30 to 5:30. Professor Bartow and assistant.

III.—QUALITATIVE ANALYSIS. This course covers the general methods for the detection and separation of the metals and acids. This is largely carried on by laboratory work, with occasional lectures on the theory. Two exercises per week, throughout the second term. 2d term, daily, 3:50 to 5:30. Mr. Cady.

IV.—TOXICOLOGY. A discussion of the source, properties, methods of detection, *post-mortem* appearances, fatal dose and methods of treatment in case of the inorganic and organic poisons. Lectures, with examinations. One exercise per week, throughout the second term. Professor Bailey.

PHARMACY.

Professor SAYRE.

Assistant Professor HAVENHILL.

Mr. EMERSON.

For equipment, see under the School of Pharmacy, page 245.

I.—PHARMACY AND PHARMACOGNOSY. A special course designed to meet the needs of medical students, comprising weights, measures and processes used in the preparation of medicines; the geographical distribution, physical properties and identification of crude drugs. Lectures, recitations, and laboratory work. 1st term, (b), 1:30 to 3:30. Mr. Havenhill.

II.—PHARMACOLOGY. The chemical and physiological properties of drugs, therapeutical application, methods of prescribing and dispensing, the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. 2d term, Monday, Tuesday, Wednesday, and Thursday, at 11:15. Professor Sayre.

III.—PHYSIOLOGICAL AND MEDICAL CHEMISTRY. This course is offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. 1st term, four days a week, 3:30 to 5:30. Professor Sayre and Mr. Emerson.

PHYSIOLOGY.

Associate Professor HIDE.

EQUIPMENT.

The physiological department is thoroughly equipped with approved modern apparatus for demonstration and experimental work.

Besides a large lecture-room that seats 100 students, it possesses a department library for the use of the students. The library contains the latest reference books, and all of the best physiological journals.

The medical laboratory is equipped with specially-planned tables, that have gas, water and electrical connections. Each table is supplied with a complete outfit of the best modern apparatus, sufficient for the investigation of hundreds of experiments, and two students are assigned to each table. It also has a large laboratory for the Pharmacy and Arts students, that contains tables particularly de-

signed for their work. In this laboratory are, besides the needed instruments, digesters, spirometers, kymographs, manometers, and all kinds of electrical apparatus, a skeleton, and a finest French manikin.

The research room is fitted up with necessary tables, instruments and electrical apparatus for any kind of physiological experiments. There is also a large preparation room, where most of the material is prepared, and a store-room.

I.—PHYSIOLOGY. Recitations and lectures, with demonstrations, conferences, and journal club, and laboratory experimental work. Foster's Text-book of Physiology. Required of second-year medical students. Daily throughout the year, 8 to 11:15. Professor Hyde.

II.—PHYSIOLOGY. Graduate course. Experimental physiology and original research. Open to students who have taken not less than a year of anatomy and physiology and have given evidence that they are prepared for it. Either or both terms, by appointment. Professor Hyde.

ZOOLOGY.

Associate Professor McCLUNG.

Doctor MAGEE.

Mr. BLACKMAN.

For equipment, see under the College, page 165.

I.—HISTOLOGY, OR MICROSCOPICAL ANATOMY. Microscopical manipulation, the study of normal tissues and the methods of preparing mounted objects are presented in this course. Lectures and laboratory work. Required of first-year medical students. 1st term, daily, 3:30 to 5:30. Mr. Blackman.

II.—EMBRYOLOGY. The general principles of ontogenetic development, with special application to man. Lectures, text-book work, and laboratory exercises. Required of second-year medical students. 2d term, (b), daily, 3:30 to 5:30. Professor McClung.

III.—PATHOLOGY. A course principally in pathological histology. Required of second-year medical students. 2d term, daily, 1:30 to 3:30. Doctor Magee and Mr. Blackman.

VIII.—The Summer Session.

Faculty.

- FRANK STRONG, PH. D., Chancellor, and President of Faculty.
- WILLIAM H. CARRUTH, PH. D., Professor of Germanic Languages and Literatures. Director of the Summer Session.
- NATHANIEL BUTLER, A. M., D. D., Professor of Education in the University of Chicago. Lecturer on Education.
- VERNON L. KELLOGG, M. S., Professor of Entomology in the Leland Stanford University. Lecturer on Entomology.
- WILLIAM M. PAYNE, LL. D., Editor *The Dial*. Lecturer on English Literature.
- EPHRAIM MILLER, PH. D., Professor of Mathematics and Astronomy.
- JAMES W. GREEN, A. M., Professor of Law.
- FRANK O. MARVIN, A. M., Professor of Civil Engineering.
- EDGAR H. S. BAILEY, PH. D., Professor of Chemistry and Metallurgy, and Director of Chemical Laboratories.
- ALEXANDER M. WILCOX, PH. D., Professor of Greek Language and Literature.
- FRANK W. BLACKMAR, PH. D., Professor of Sociology and Economics.
- LEWIS L. DYCHE, A. M., M. S., Professor of Systematic Zoology, and Taxidermist.
- CHARLES G. DUNLAP, LITT. D., Professor of English Literature.
- CARL A. PREYER, Professor of Piano, Counterpoint, Canon, and Fugue.
- OLIN TEMPLIN, A. M., M. S., Professor of Philosophy.
- EDWIN M. HOPKINS, PH. D., Professor of Rhetoric and English Language.
- FRANK H. HODDER, PH. M., Professor of American History and Administration.
- ERASMUS HAWORTH, PH. D., Professor of Physical Geology, Mineralogy, and Mining.
- ARTHUR T. WALKER, PH. D., Professor of Latin Language and Literature.
- WILLIAM C. STEVENS, M. S., Professor of Botany.

- ARVIN S. OLIN, A. M., Professor of Education.
- WILLIAM A. GRIFFITH, Professor of Drawing and Painting.
- EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
- WILBUR C. ABBOTT, B. Litt., Professor of European History.
- CHARLES E. HUBACH, Professor of Voice.
- HENRY B. NEWSON, PH. D., Associate Professor of Mathematics.
- JAMES NAISMITH, M. D., Associate Professor of Physical Training, and Chapel Director.
- SAMUEL J. HUNTER, A. M., Associate Professor of Entomology.
- EDWARD BARTOW, PH. D., Associate Professor of Chemistry.
- MILES W. STERLING, A. M., Associate Professor of Greek.
- RAPHAEL D. O'LEARY, A. B., Associate Professor of English.
- WILLIAM E. HIGGINS, B. S., LL. B., Associate Professor of Law.
- CLARENCE E. MCCLUNG, PH. D., Associate Professor of Zoology.
- HANNAH OLIVER, A. M., Assistant Professor of Latin.
- MARTIN E. RICE, M. S., Assistant Professor of Physics and Electrical Engineering.
- ELMER F. ENGEL, A. M., Assistant Professor of German.
- HAMILTON P. CADY, PH. D., Assistant Professor of Chemistry.
- RALPH W. CONE, A. M., Assistant Professor of Sociology and Economics.
- FREDERIC N. RAYMOND, A. M., Assistant Professor of English.
- EDGAR G. FRAZIER, PH. B., Assistant Professor of Public Speaking and Debate.
- CARL L. BECKER, B. L., Assistant Professor of European History.
- FRANK E. BRYANT, A. M., Assistant Professor of English.
- RALPH E. BASSETT, A. M., Assistant Professor of Romance Languages.
- ARTHUR J. BOYNTON, A. M., Assistant Professor of Sociology and Economics.
- ELISE NEUENSCHWANDER, A. B., Instructor in French.
- HARRIET GREISSINGER, MUS. B., Instructor in Piano.

Purposes of the Summer Session.

In accordance with a general desire to increase the usefulness of the University and bring its resources nearer to the people of the state, the Summer School was established to meet the demands of the following classes:

1. Instructors in other colleges who may wish the opportunity of further study and of observing the work in their subject as pursued at the University of Kansas.

2. City and county superintendents, principals, and teachers, especially those having work of high-school grade, to enable such to review their work, to become familiar with the latest and best methods, and thus to prepare to do their own work better.

3. Students preparing to enter the University, to enable such to complete their preparation.

4. University students, whether already matriculated or coming for the first time into membership in the University, to enable such to correct irregularities in their standing or to attain standing in the University.

5. Graduate students, especially such as have already completed a portion of their work for the second degree and are prevented by regular employment from attending University during the other sessions.

6. Intelligent people in all walks of life who wish to enlarge their intellectual horizon, to renew or review college studies of earlier years, to get into touch with current scholarship, and who may be inclined to spend a vacation from the regular tasks of life at this pleasant seat of learning.

A Cool Place for Summer Work.

The chief objection that has been urged against the Summer Session is the claim that the climate of Kansas in summer is too oppressive for intense mental exertion. But a comparison of conditions with those in neighboring states leads to the conclusion that the heat of Kansas is no more trying than that of Indiana or Missouri, or even of Chicago. Moreover, there is no cooler place in all Kansas in summer than the breezy heights of Mount Oread. The heavy walls of the buildings, the plentiful shade of the campus and the perpetual breeze make this the most suitable place in the state for intellectual work during the summer. Furthermore, it is noted that the teachers of Kansas have for years and by thousands endured the heat and the pressure of summer institutes, and the Summer Session at the University will be a moderate trial in comparison. The earlier morning hours and those of the late afternoon are preferred for regular exercises. As the Summer Session lasts only six weeks, there

is no reason to fear that the work will exhaust either instructors or students. Precautions are taken to prevent enthusiastic students from undertaking too much work. The University is supplied with distilled water, and the city supply has often been analyzed and found germ-free.

For complete description of buildings and grounds, see pages 38-41.

Nature of Courses.

To meet the demands of the various classes of students, the courses given are of two kinds—those taken for entrance or advanced credit, and those for which no college credit toward a degree is expected.

COURSES NOT LEADING TO A DEGREE.

Courses of this kind are offered to any who are qualified to profit by them, without regard to regular university standing. Record will be kept of work and attendance in such courses, and a certificate of such attendance given, if desired. Students will not enroll in more than four such popular courses, as a maximum, though they may attend as visitors whatever courses they may desire. The popular courses will meet at least one hour daily. The high-school teachers of the state are especially invited to take advantage of these courses to refresh their knowledge of such subjects as demand it, and especially to bring themselves into touch with the University and the needs of their pupils who may be preparing to enter the University.

All persons enrolled in the Summer Session for work not leading to a degree are welcome to attend whatever exercises and lectures they desire, but if they attend any course regularly it is expected that they enroll as regular members of the class.

COURSES FOR REGULAR UNIVERSITY CREDIT.

For the present most courses to be credited toward a university degree will be duplicates of those given during the regular sessions, although some courses not usually divided offer half-term credits. No work of the Summer School will be accepted toward a degree which does not equal in quantity and quality the work of the regular sessions. To this end the following regulations are observed:

For students already matriculated in the University, the same rules regarding maturity and qualification for taking a course apply as in other sessions. Students who enroll for credit toward a degree must be regularly matriculated. Special students must satisfy the instructor of their fitness to pursue the courses given by him. Lecture and recitation courses for full credit meet two hours daily, five days a week, for six weeks, each recitation hour requiring three hours of study or library work. A half-course of this kind meets one

hour daily, and requires three hours of study or library work daily. Laboratory courses require five hours daily for the six weeks; shop-work and drawing equal, hour for hour, the work of the regular sessions; but laboratory hours will not exceed thirty per week. One full course (equivalent to five hours per week for a regular term of eighteen weeks) is the maximum credit that can be attained in one Summer Session; but engineers may do in addition one course in shop or drawing. Students desiring a full-course credit toward a degree may not enroll in any other course, and will not be encouraged to attend other courses, as the completion of one full-credit course in the short session demands all of the student's time not properly due to rest and recreation.

Terms of Admission.

The requirements for admission are the same for the Summer Session as for the other sessions of the University. Graduates of the University of Kansas or other colleges and universities of good standing are admitted to graduate courses without examination. Undergraduate students are admitted as follows:

1. By passing the examinations for entrance to any regular course of the University. The entrance examinations to the University this year fall June 1, 2 and 3, or they may be taken at the opening of the Summer Session.

2. By certified transcript of record from an accredited school.

3. By certified standing or diploma of graduation from a state normal school.

4. By presentation of evidence of satisfactory scholarship and character from a college or university at which the candidate has been in attendance.

Students will be admitted to the elementary courses of the Summer School without special examination. They will also be admitted to University courses for which they are qualified, but University credit will be given only to students who have satisfied the regular entrance requirements of the University.

Advanced, *i. e.*, college, credit will be given for work done in high schools upon examination only.

Blank certificates of admission will be sent on application to the Registrar.

To Courses not for a Degree. Persons desiring to enter these courses are not required to conform to the requirements for admission to the different schools of the University, but are at liberty to enter such courses as they are able profitably to take. This arrangement is to provide for persons—many in number—who could

not, as far as formal preparatory training is concerned, comply with the requirements for admission to the College of the University, but whose maturity and experience enable them to pursue many university courses with profit.

Expenses for the Summer Session.

The fee for the Summer Session will be ten dollars for citizens of Kansas, twenty dollars for non-residents, which will cover admission to all courses. For certain laboratory courses there will be, in addition, the cost of materials.

Lawrence is well provided with boarding-houses and restaurants, and a sufficient number of these will continue in operation to supply all demands of the Summer Session. Good board, including room and service, may be had in private families at from \$3 to \$4.50 per week. If the students choose to organize themselves into a club, the expense of living may be much reduced. The stewards of some of the existing student boarding clubs will remain on the ground and be prepared to carry on their organizations. There is a lunch-room within 500 feet of the main building, so that those who wish can avoid going down the hill in the middle of the day.

A list of rooms and boarding places is already prepared, and students can obtain information from the Registrar and engage rooms in advance if they so desire.

Degrees Granted.

The degrees and certificates given by the University through its various schools are shown below. Statements concerning the requirements for these degrees will be found under each school.

GRADUATE SCHOOL: Doctor of Philosophy, Master of Arts, Master of Science, Civil Engineer, Electrical Engineer.

THE COLLEGE OF LIBERAL ARTS AND SCIENCES: Bachelor of Arts, Teacher's Diploma, Bachelor of Arts in Medicine, Bachelor of Arts in Law.

SCHOOL OF ENGINEERING: Bachelor of Science.

SCHOOL OF LAW: Bachelor of Laws.

SCHOOL OF FINE ARTS: Bachelor of Music, Bachelor of Painting, Teacher's certificate at completion of two-year course.

SCHOOL OF PHARMACY: Bachelor of Science, Pharmaceutical Chemist.

SCHOOL OF MEDICINE: Bachelor of Science in Medicine, Bachelor of Arts in Medicine, Certificate of completion of the course.

Teacher's Diploma.

The teacher's diploma of the University may be given to A. B., A. M. and Ph. D. graduates of the University on the following conditions:

1. *Special Knowledge*.—The completion of at least four terms of college work in the subject that the candidate proposes to teach, or in closely allied subjects; the ultimate decision as to the candidate's proficiency to rest with the head of the department in which the major work is taken.

2. *Professional Knowledge*.—The completion of two and one-half terms' work in the department of education.

3. *Amount of Work Offered*.—The candidate for the A. B. degree, who is at the same time a candidate for the teacher's diploma, shall be required to offer twenty-five terms of undergraduate work.

4. *Grade of Scholarship*.—The teacher's diploma shall be granted only to graduates whose scholarship in the twenty-five terms' work offered for the degree and the diploma averages as high as grade II.

On presentation of the University teacher's diploma, the State Board of Education will issue a three-year state teacher's certificate. At the expiration of the three-year certificate, a life certificate will be issued, if the candidate has taught successfully during two of the three years.

Recommendation of Teachers.

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies and colleges which may be in need of competent instructors. To this end a committee of the Faculty preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position that may be made vacant. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

Recitals.

Organ and piano recitals and other musical entertainments will be given during the Summer Session, to which all students in attendance are invited without charge.

Equipment for the Summer Session.

The Summer Session will command the entire equipment of the library of 45,000 volumes, and the laboratories of the University.

The work in botany, entomology, zoölogy and geology is supported by the cabinet collections which contain upward of 250,000 specimens, and by ample laboratories.

Physics, chemistry and pharmacy are taught in separate and well-furnished buildings, with commodious laboratories for special research as well as for classroom work, and supplied with much valuable modern apparatus.

The Greek and Latin departments have at their command a large number of casts, photographs, plates and stereopticon slides of ancient views, portraits, buildings, statues, paintings, vases, and manuscripts.

The departments of history and modern languages are provided with wall maps and charts, and a considerable collection of photographs. All the departments use the stereopticon for illustrating lectures.

The department of mathematics has a large collection of mathematical models of the best German make.

The University library is open every day of the year, excepting Sundays and legal holidays. Library hours are eight A. M. to six P. M. ; Saturdays, eight A. M. to twelve M. The reading-room is open from seven P. M. to ten P. M. when the University is in session. Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library for three weeks.

For an extended description of the library and other University institutions, see pages 297 *et seq.*

GYMNASIUM AND OUT-OF-DOOR SPORTS.

The University gymnasium, with lockers and bath-rooms, will be open during the Summer Session for the use of the students. Doctor Naismith, director of physical training, will conduct courses in physical training with reference to public school needs, and will also direct outdoor sport. The Kansas river affords a fine boating course, the golf links adjoin the campus, tennis courts are available, and McCook Field will furnish excellent grounds for baseball and track events. Lawrence has several miles of brick paving, furnishing ample wheeling courses. In fact, the Summer Session offers in many ways the advantages of a summer outing to teachers in the cities.

Religious Aids.

CHAPEL.—Religious exercises are held in the University chapel from 10:00 to 10:15, and on Friday morning from 10:00 to 10:30. Though attendance at chapel is not required of students, all are cordially invited, and the services are made as attractive and profitable as possible. They consist of Scripture reading, hymns, prayer, and brief addresses by the Chancellor and others.

YOUNG MEN'S CHRISTIAN ASSOCIATION.—The Young Men's Christian Association is an organization composed of 300 Christian men of the University, banded together for the purpose of preserving and advancing the spiritual interests of the institution.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION.—The Young Women's Christian Association is an organization composed of 225 Christian women of the University, united for the attainment of the most perfect development of Christian character among the young women of the institution.

BIBLE CHAIR.—The Woman's Board of Missions of the Christian Church has recently established a chair of Bible instruction at Lawrence for the benefit of the University students, and has purchased a site on Mount Oread, near the University campus, for the erection of a Bible hall. Although maintained in close proximity to the University, the chair is in no way connected with the institution.

Courses of Instruction.

The proffer of the courses which follow is tentative. The University reserves the right to withdraw any course for which there are less than six applicants. It will be noted that in several departments courses are marked as alternatives. This means that only one of them can be given, to be determined by the demand. Accordingly, it is very important to all concerned that students contemplating attendance should give early notice of their intention and of their preference in courses.

BOTANY.

*I.—A BEGINNING COURSE. Comprising a study of two forms and structures of typical flowering plants and the functions of the different members. Laboratory work, field excursions, and lectures. Five hours daily. Professor Stevens. Full-term credit.

V.—VEGETABLE ECOLOGY. A study of the adaptation of plants to their environment, comprising a microscopic study of tissues, field observations, and experiments. Five hours daily. Professor Stevens. Full-term credit.

CHEMISTRY.

The following courses are offered, subject to the general regulations that govern other courses. Should there be sufficient demand for several courses, arrangements will be made so that students can take the work. In the laboratory courses no deposit will be required, but students will be loaned the necessary apparatus, and required to pay for apparatus and chemicals actually broken, destroyed, or used up.

I. INTRODUCTORY CHEMISTRY. A study of the chemical elements and their compounds, based on Remsen's Briefer Course in Chemistry. Lectures and laboratory work, arranged in such proportions as shall be best suited to the advancement of the student. From two to five hours daily. Professor Bailey and assistant. Full-term credit. Any student whose previous general training is sufficient may be admitted to this course, and may receive credit for the same. This course without laboratory work may also be taken by teachers and others who desire simply to review the subject. In

*Roman numbers prefixed to courses are those used in numbering courses in the College of Arts.

this case no examinations will be required and no credit will be given.

II.—ADVANCED INORGANIC CHEMISTRY. This course, consisting of lectures, recitations, and laboratory work, is based on Oswald's Principles of Inorganic Chemistry. It must be preceded by course I, or a similar course in general chemistry. It may be taken for credit in The College or Engineering School. Mr. Cady.

III.—QUALITATIVE ANALYSIS. Lectures and laboratory work. Bailey and Cady's Guide to the Study of Qualitative Analysis. Not less than five hours per day. Mr. Cady. This must be preceded by a course in general chemistry. This course may be taken for credit in The College and Engineering School of the University, provided the student has already received credit for chemistry II; otherwise the credit will be withheld till that course is completed. Pharmacy and medical students will receive credit for the course.

XII.—ORGANIC CHEMISTRY. A study of the hydrocarbons and their derivatives. Lectures, recitations, and laboratory work. This course must also be preceded by course I. It may be taken for credit in The College, Pharmacy or Medical School. Professor Bartow. Those who are prepared for it may take chemistry XIII.

V.—SANITARY AND APPLIED CHEMISTRY. This is a practical course of lectures, and is especially suited to those who have such a knowledge of the subject as is covered by course I, and who desire to extend their study in the line of the practical applications of the subject to common life. It covers such topics as the chemistry of air, water, fuels, ventilation, the composition of foods, preservation and cooking of foods, digestion, economy of food, dietaries, etc. Teachers and others who desire may take this course for credit or without examinations at the close, without credit. Professor Bailey.

VII.—QUANTITATIVE ANALYSIS. This course should be preceded by course III, and may be taken for credit in the College or Engineering School. Professor Bartow.

The chemical laboratories offer facilities for research work in analytical, physical and organic chemistry to graduates of this or other institutions who are prepared to do such work. These courses will be accepted for credit in the Graduate School.

FREE-HAND DRAWING.

V.—The course in free-hand drawing will consist of drawing in charcoal from the cast, elementary perspective, through shadows and reflections, and the principles of pictorial composition.

The method of instruction aims to teach the student to construct form in a simple and correct manner, with special attention given

to methods of instruction for those who desire to teach drawing in the public schools, and methods of making drawings for reproduction for those wishing to use them in their scientific work.

The drawing classes will run throughout the term, daily, from 9 to 12, and 1 to 4.

The lectures on perspective will be given Monday, Wednesday, and Friday, 4 to 5, with examples given for outside work.

The lectures upon composition will be given on Tuesday and Thursday, 4 to 5, with exercises for outside work. Professor Griffith.

For the entire course a full-term credit will be given in the College. The perspective and composition lectures may be taken as a popular course, without credit.

EDUCATION.

XII.—WORK OF EDUCATIONAL REFORMERS OF THE EIGHTEENTH AND NINETEENTH CENTURIES. Required readings, reports, and special studies. One hour daily. Professor Olin. Half-term credit.

XIII.—EDUCATIONAL DOCTRINES OF ROSSEAU, HERBERT, AND HERBERT SPENCER. Critical reading of the *Emile*, Herbart's *Science of Education*, and Spencer's *Education*. Discussion and comparison of educational theories. One hour daily. Professor Olin. Half-term credit.

These courses are open to Juniors, Seniors, and Graduates. For graduate credit, attendance on the weekly conference in education is required.

Attention is also called to the course of ten lectures by Prof. Nathaniel Butler, of the University of Chicago, on "Educational Problems."

ENGINEERING.

V.—SURVEYING. Plane surveying, surveyor's instruments, government-land surveys, calculation of areas, leveling, topographic surveys, etc. Plane trigonometry is required for this course. Text-book, Raymond's *Plane Surveying*. Daily recitations and field practice. Professor Marvin. Full-term credit.

ENGLISH LITERATURE.

Not all of these courses can be scheduled. Preference will be given to the four with the largest enrolment.

I.—ENGLISH LITERATURE. A GENERAL SURVEY. Class study of representative authors, and collateral reading. Text's used: Pancoast's *Introduction to English Literature*, and Pancoast's

Standard English Poems. Open to students who are prepared according to the University entrance requirements in English. Two hours daily. Mr. Raymond. Full-term credit.

III.—THE TEACHING OF LITERATURE, with special reference to American Literature. Equivalent to a short course in American Literature. Two hours daily. Professor Hopkins. Full-term credit.

V.—SHAKSPERE. Lectures upon the life and times of Shakspeare, with required theses. Interpretation of three plays, with special attention to literary form, plot, construction, character study, and Elizabethan grammar. Two hours daily. Professor O'Leary. Full term credit.

VII.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Prose, exclusive of the novel. Biographical and critical lectures. The essay. Criticism. History. The authors studied are Lamb, Hazlitt, De Quincey, Landor, Newman, Arnold, Carlyle, Macaulay, Ruskin, Pater, and Stevenson. Four hours of library work daily, and preparation of two theses. Daily, at 8. Professor Dunlap.

X.—THE ENGLISH NOVEL. A historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction. Four hours of library work daily, and preparation of two theses. Daily, at 8. Professor Dunlap.

RHETORIC AND ENGLISH LANGUAGE.

I.—RHETORIC AND ENGLISH COMPOSITION. Two hours daily, with exercises and themes. Mr. Raymond. Full-term credit.

III.—NARRATION AND DESCRIPTION. Study of general principles, with exercises. One hour daily. Professor O'Leary. Half-term credit.

IV.—EXPOSITION AND ARGUMENT. Study of general principles, with exercises. One hour daily. Professor O'Leary. Half-term credit.

VI.—OLDER ENGLISH. An elementary course in Old English (Anglo-Saxon), Early Middle English, and Late Middle English (Chaucer), with the history of the development of the language. Lectures and recitations. Enough literature will be read so that the student may get a fair idea of what our language was like in its various earlier stages. Two hours daily. Mr. Bryant. Full-term credit.

VIII.—HISTORY OF THE ENGLISH LANGUAGE, AND PHONETICS. Two hours daily. Mr. Bryant. Full-term credit.

IX.—THE TEACHING OF ENGLISH. Lecture and conference course in principles and methods of teaching composition, literature, and language. Two hours daily. Professor Hopkins. Full-term credit.

ENTOMOLOGY.

I.—INTRODUCTORY COURSE. This course is designed to give a general survey of morphology, classification, distribution, and activities. The laboratory work has to do with a careful study of one or more type forms from each group considered, followed by a comparative study of closely related forms. The general principles of classification are illustrated by exercises in determination of species. When possible, the life cycle and habits of one or two forms will be studied in the laboratory, supplemented by field exercises. Five hours daily. Full-term credit. Professor Hunter.

II.—BIONOMICS. This is a course in field ecology—a study of relations to natural environment, as illustrated by the fauna under consideration; conditions of life, cycle of life, methods of observation, note-taking, and collecting. In the laboratory the field-work is accompanied by study and determination of forms collected. Five hours daily. Full-term credit. Professor Hunter.

FRENCH.

I.—ELEMENTARY FRENCH. A course for beginners, including the essentials of the grammar and easy reading, with careful drill in pronunciation. Oral and written exercises. Text-book, Fraser and Squair's French Grammar. Two hours daily. Professor Galloo. Full-term credit. The department will also offer either course II or course III, according to the demand.

II.—This course is a continuation of course I. It carries on the study of grammar, with easy composition and dictation, and some practice in speaking. An attempt is made to gain a good vocabulary by extensive reading of simple prose, such as Daudet's Selected Stories, Pouvillon's Petites Ames, and Sandeau's Mademoiselle de la Seiglière. Two hours daily. Miss Neuenschwander. Full-term credit.

III.—This course may be taken by students having had one year of French, *i. e.*, courses I and II, or their equivalent. It consists of the reading of some of the masterpieces of nineteenth-century prose: Colomba (Mérimée), La Chute (an episode from Les Misérables, by V. Hugo), Le Monde ou l'on s'ennuie (Pailleron), Le Crime de Sylvestre Bonnard (A. France), with practice in dictation, composition, and conversation. Two hours daily. Miss Neuenschwander. Full-term credit.

Teachers or others who, either for review or for a study of methods, desire to take any of the work outlined above, will be assigned conference hours for discussion of special points.

SPANISH.

I.—ELEMENTARY SPANISH. A course for beginners, in which the object is to obtain, at an early date, a practical reading knowledge of modern Spanish. Emphasis is laid on acquisition of the leading grammatical facts of the language, and a good pronunciation is carefully cultivated. The text-books are: Ramsay's Spanish Grammar, Fontaine's Doce Cuentos escogidos, Matzke's Spanish Reader. Two hours daily. Mr. Bassett. Full-term credit.

GERMAN.

I.—OUTLINE OF GRAMMAR (Otis), with composition exercises. Huss's Reader. Two hours daily. Professor Carruth and Mr. Engel. Full-term credit.

II.—ZSCHOKKE, KLEIST, HEYSE (100 pp.), and WILHELM TELL. Also sight reading. Two hours daily. Mr. Engel. Full-term credit.

III.—(1) LESSING'S MINNA VON BARNHELM AND SCHILLER'S Geschichte des 30-jährigen Krieges; (2) SCIENTIFIC GERMAN. Two hours daily. Mr. Engel. Full-term credit.

POPULAR COURSE.—A review of the difficulties of German grammar. Drill in pronunciation. Discussion and demonstration of methods of teaching German in high schools. Criticism of text-books and notes on selection. One hour daily. Professor Carruth. Not for credit. This course is intended especially for those already engaged, or about to engage, in teaching German.

GEOLOGY.

VIII.—FIELD GEOLOGY AND GEOGRAPHY. Professor Haworth will conduct a course in field geology and geography, consisting principally of field-work in the eastern part of the state.

He will take the class into the field and will provide camping equipments or other means of subsistence, so that the expenses will be little, if any, greater than ordinary boarding in the city. The term will constitute a full term's work in geology or physiography.

GREEK.

I.—A course in beginning Greek. Two hours daily. Professor Sterling. Full-term credit.

XV.—A course in Greek literature through translations. Two hours daily. Professor Wilcox. Full-term credit.

AMERICAN HISTORY.

I.—AMERICAN COLONIAL HISTORY. Lectures on the discovery of America, the origin and development of the English colonies, and the causes and results of the revolution. This is a summary of the first regular course in American history. It is intended to continue it, with similar summaries of the courses in presidential administrations, so that the whole field of American history may be covered in three successive summer terms. One hour daily. Professor Hodder. May be taken for or without credit. Half-term credit.

III.—CONSTITUTIONAL LAW. Recitations from Cooley's "Principles of Constitutional Law." Open to all students. Offered especially to teachers of civil government in the schools. One hour daily. Professor Hodder. Half-term credit.

IX.—AMERICAN HISTORICAL SEMINARY. Investigation of special topics. Open to graduates of the University who have had two years' work in American history. Hours by appointment. Professor Hodder. Half-term credit.

EUROPEAN HISTORY.

The attention of those intending to take work in European history in the Summer School is particularly called to the arrangement by which it is possible to pursue a continuous course from the 1st of April to the close of the Summer School in that department, which covers the following courses of regular University credit:

1. Mediæval and modern history.
2. Renaissance and reformation.
3. European colonization and the history of European peoples outside of Europe.
4. Teachers' course.

For the summer of 1904, there are offered, with or without credit, as desired:

I.—MEDLÆVAL AND MODERN HISTORY. This will cover the history of Europe from the fall of the western Roman empire to the nineteenth century. It will aim to give the student a grasp of the main forces which have been at work in forming the mediæval civilization, the intellectual and religious revolutions of the fifteenth and sixteenth centuries, the establishment of the modern states and the modern democratic and colonizing movements. Special attention will be given to bibliography, geography, and methods of teaching. Text-book, lectures, and library work. Full-term credit. Professor Abbott and Mr. Becker.

II.—HISTORICAL METHODS. This course covers the scope and methods of work in history, investigation, and presentation, and will

be found especially desirable for those teaching or about to teach in that field. Much of the course will consist of a review of European history, both general and in special periods and movements, to illustrate the various problems of study or teaching. Lectures, discussions, library work, and reports. Full-term credit. Professor Abbott and Mr. Becker.

III.—EUROPEAN COLONIZATION. In connection with either of the above courses, there will be offered a series of lectures and optional readings on the history of Europeans outside of Europe since the fifteenth century. It will endeavor to add to and supplement the ordinary historical work by study of the general movements of exploration and discovery, conquest and colonization, and the formation and history of states by European peoples. It will touch upon such subjects as the Spanish empire and the South and Central American states, the British empire, including Canada, Australia, Cape Colony, etc., and the expansion of Russia. This will be a popular course, not for credit, and will cover the first three weeks of the Summer Session. Professor Abbott.

LATIN.

II*a*.—CICERO'S *DE SENECTUTE*. With the first half of Bennett's Latin Prose Composition and a review of the treatment of cases in the grammar. One hour and a half daily. Miss Oliver. Half-term credit.

II*b*.—LIVY, Book XXI. With the second half of Bennett's Latin Prose Composition and a review of the treatment of modes in the grammar. One hour and a half a daily. Miss Oliver. Half-term credit.

Courses II*a* and II*b* together are the equivalent of course II in the General Catalogue, the course which immediately follows the study of Vergil; but the two authors are given side by side instead of consecutively, for the convenience of those who wish to give only half their time to the study of Latin. Bennett's Latin Prose Composition is given in place of the exercises regularly used, for the convenience of teachers who may wish to use that manual in teaching. Attention may be called to the fact that the entrance requirement in Latin composition will be more rigidly enforced in the future. The review of the grammar will be made as practical for teachers as possible. Students who complete this course with high standing will be admitted to Latin IV, if they desire to continue their study of Latin in the fall term.

XIII.—CÆSAR'S *GALLIC CAMPAIGNS*. A critical study of the Gallic War, with special reference to historical and geographical questions. The text will not be translated in class, and no attention

will be given to syntactical points. The greater part of the work must be done in the library, where there is a good collection of material on Cæsar. The course is intended both as an introduction to methods of investigation and as a profitable study for teachers of Cæsar. This course is open only to graduates and advanced undergraduates. Applicants need not have taken more than one or two Latin courses in addition to their high-school Latin, but must have a reading knowledge of either French or German. Two to three hours a day. Professor Walker.

LAW.

Those who wish classes in subjects offered in the Law School should make application as early as possible, stating two subjects desired as first, and two as second choice. During the last session of the Summer School instruction in the following subjects was given: Contracts, Torts, Agency, and Insurance. This year each student will be permitted to take any two of the subjects given in the first two years of the regular law course, provided he be qualified to pursue such subjects, and there be a sufficient number of students enrolled for each subject desired.

MATHEMATICS.

I.—SOLID GEOMETRY. Professor Miller or Professor Newson. Half-term credit.

II.—ALGEBRA. Progressions, binomial theorem, undetermined coefficients, and logarithms. Text-book, Wentworth's College Algebra. Professor Miller or Professor Newson. Half-term credit.

III.—PLANE TRIGONOMETRY. Text-book, Miller. Professor Miller and Professor Newson. Half-term credit.

Any two of these three will give a full-term credit.

IV.—ANALYTIC GEOMETRY. Professor Newson.

V.—CALCULUS. Text-book, Osborne. Must be preceded by course III. Professor Miller.

A TEACHER'S COURSE IN MATHEMATICS.

The last one or two years has witnessed a remarkable revival in this country and abroad of interest in the teaching of mathematics and in the question of its proper place in the curriculum of the schools. In all sections of the country teachers' associations and other interested people are eagerly discussing questions of mathematical reform in the grammar grades and high school. Special organizations have been formed in many parts of the country to deal with these questions, and a special journal has been founded to furnish a suitable forum for such discussions.

There is already a wide-spread interest in this movement among Kansas teachers, and many of them are desirous of knowing for themselves more of the relative merits and demerits of the present system as well as the character and extent of the proposed changes. To meet the wants of this large body of teachers the following course is offered at the Summer Session :

X.—TEACHER'S COURSE IN MATHEMATICS. This course is designed for teachers, and students who are preparing to become teachers of mathematics. It embraces the history, pedagogy, and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. The course consists of (1) history of mathematics, reading, and lectures; (2) a comparative study of the mathematical curricula of the schools of this country and of Europe; (3) a consideration of the best order of taking up the different subjects; and (4) the best methods of teaching the different topics. Prerequisites: Any one holding a teacher's certificate in Kansas is qualified to enter this course. Professor Newson.

MUSIC.

The School of Fine Arts will offer courses in piano, technic, harmony, and voice, under Professor Preyer, Professor Hubach, and Miss Greissing.

The courses in piano will consist of classes in technic, interpretation, and private lessons.

The work in theory will include classes in harmony and private instruction in counterpoint, musical analysis, and composition.

Voice instruction will be given privately and in classes. A feature of the course will be work in advanced vocalization, oratorio, and opera, for teachers and advanced students.

Faculty recitals will be given weekly for the benefit of students, and will be open to the general public.

PHILOSOPHY.

I.—ELEMENTARY PSYCHOLOGY. Two hours daily. Professor Templin. Full-term credit.

V.—ESTHETICS. A historical and constructive treatment of the problem of the beautiful, followed by an application of esthetic theory to nature and the fine arts. Lectures, discussions, and assigned readings. Two hours daily. Professor Templin. Full-term credit.

PUBLIC SPEAKING AND READING.

I.—PRINCIPLES OF SPOKEN DISCOURSE. An introductory course in the principles of public speaking. The course will offer training in the principles of good reading, graded exercises for the cultivation of the voice and for the removal of vocal defects, and directions for the construction and oral presentation of original speeches. Two hours daily, at 8. Mr. Frazier.

II.—ORAL DEBATES. A course designed to give the student preliminary training in debate. The fundamental principles of debating will be discussed in detail; lectures will be given on the collecting and arranging of material and on the conduct of the debate. Weekly debates by the members of the class. Two hours daily, at 8. Mr. Frazier.

III.—READING ALOUD. A course designed as an aid to the teacher of reading in primary and secondary schools. A brief review of past elocutionary methods for the purpose of comparison with the more modern system of teaching. Methods for creating an interest in reading and suggestions for training the pupil to read intelligently and with feeling. Two hours daily, at 8. Mr. Frazier.

PHYSICAL TRAINING.

I.—SCHOOL GYMNASTICS.—(a) Free-hand exercises; (b) exercises using the desks for apparatus; (c) exercises using the other pupils for resistance. One hour daily. Doctor Naismith. Not for credit.

II.—GAMES FOR THE SCHOOL YARD.—(a) Group games, *e. g.*, basket-ball, hockey, volley-ball, association ball; (b) individual games, *e. g.*, tennis, hand-ball, squash-ball, and field events. One hour daily. Doctor Naismith. Not for credit.

V.—PHYSIOLOGY OF EXERCISE, including the effects of exercise on the muscular, the nervous, the respiratory, the circulatory and the digestive systems. One hour daily. Doctor Naismith. Half-term credit.

PHYSICS.

I.—Physics 1. Recitations and laboratory work, six hours per day. May be taken by those having no previous training in physics. Must be preceded by algebra and plane geometry. A little trigonometry is recommended. Full-term credit. Mr. Rice.

II.—Physics 2. Lectures, experimental demonstrations, and recitations, two hours per day. Must be preceded by physics 1, or high-school physics and plane trigonometry. Students from high schools giving no laboratory work will be required to work in laboratory two periods (two hours) per week, in addition to the regular work. Full-term credit. Mr. Rice.

III.—Popular physics. Same as 2, the student merely attending and receiving no credit.

Physics 1, or 2 and 3 will be given according to the greater demand.

ECONOMICS AND SOCIOLOGY.

I.—ELEMENTS OF ECONOMICS. This course aims to give a general knowledge of economic science and of some of its applications, and also to serve as preparation for more advanced courses. Active discussion of economic principles and problems is encouraged. Full-term credit.

II.—ECONOMIC HISTORY OF ENGLAND AND THE UNITED STATES. The object of this course is to trace and explain the general development of industries in England and the United States from about the twelfth century to the present time. Although this course and course I are mutually helpful, neither is required as preparation for the other. Full-term credit.

VII.—COMMERCIAL GEOGRAPHY AND HISTORY. This is a study of the sources of the materials of commerce, both crude and manufactured; of trade routes and materials of commerce; and of the influence of geographical and historical conditions upon both. Full-term credit.

I.—ELEMENTS OF SOCIOLOGY. This study includes the principles of sociology, and a careful survey of social laws, social theories, and social organization. Lectures and text-book, with collateral reading. Full-term credit.

ZOOLOGY.

I.—ELEMENTARY ZOOLOGY. A course in the general principles of zoölogy. Laboratory work in the study of type specimens, and lectures upon classification, distribution, and habits. Professor McClung. Full-term credit.

IV.—HISTOLOGY. A course in the methods of microscopical technique and the structure of the normal tissues. Professor McClung. Full-term credit.

V.—ADVANCED WORK IN CYTOLOGY AND EMBRYOLOGY. Open to students who have had training in courses equivalent to the work of I and II. Professor McClung. Full-term credit.

XVI.—A course designed for teachers of zoology, who wish to learn methods of preparing material for class use and for exhibition, Professor Dyche.

Conferences.

For the benefit of teachers, conferences of those interested in a given study or group of studies will be held for the discussion of methods. Thus, the teachers of the state high schools and those of the University will be brought into the closest personal contact. The smaller size of all classes in the Summer Session will also prove an advantage in this respect, as the individual members will receive more personal attention than is possible during the regular sessions.

According to the demand, conferences will be organized in the following groups: Languages, history and economics, mathematics, English, biology, physical science, education and philosophy, sanitation and good roads.

Lecturers from Abroad.

Several short courses of lectures will be given by distinguished men and educators from abroad. Among those already engaged are: Prof. Nathaniel Butler, of the University of Chicago; Prof. V. L. Kellogg, of Stanford University; Dr. William Morton Payne, editor of *The Dial*; Prof. Caroline L. Hunt, University of Wisconsin.

PROF. NATHANIEL BUTLER, of the University of Chicago, is an educator of wide experience. He is a graduate of Colby University, Maine; was professor of English literature in the University of Chicago; then professor of Latin in the University of Illinois; then director of university-extension work at the University of Chicago; then, for six years, president of Colby University; and for the past three years professor of education at the University of Chicago. He is the author of the well-known Latin text-book *Bellum Helveticum*, and of the article on "University Extension" in the *Universal Encyclopedia*. Professor Butler will give ten lectures on "Topics in Secondary Education" during the first three weeks of the Summer Session:

I, II.—Some Present-day Ideals in Education.

III.—The Community Life of the Child.

IV, V.—Secondary Education.

VI.—Elections in Secondary Education.

VII.—On the Teaching of Latin.

VIII.—On the Uses of Literature.

IX.—Leading Forms of Poetry and their Uses in Teaching.

X.—The Essay as Teaching Material.

DR. WILLIAM MORTON PAYNE has been for more than twenty years instructor in English literature in the Chicago high schools,

and recently a lecturer on English literature at the University of Wisconsin. For two years he was librarian of the Chicago public library. Before becoming associate editor of *The Dial* he was literary editor of the *Chicago News* and of the *Evening Journal*. *The Dial* is conceded to be the best journal of literary criticism in America. Mr. Payne is the author of "The New Education," "Little Leaders," "Editorial Echoes," "Various Views," the latter volumes being collections of his articles in *The Dial*. He is also the translator of Björnsen's "Sigurd Slembe," and of Jäger's "Life of Henrik Ibsen." He is secretary and treasurer of the Twentieth Century club, and has been president of the Chicago French club. Mr. Payne is also a contributor of many articles in the Warner Library of the World's Best Literature. He will deliver a series of twelve lectures on "The Greater English Poets of the Nineteenth Century." These lectures are not formal and biographical, but deal with the ideas of the poets: their politics, religion, philosophy, and sociology. The series has been given at the University of Wisconsin, and will probably be given this summer at the University of Chicago. The poets treated are: Keats, Shelley, Byron, Coleridge, Wordsworth, Landor, Tennyson, Browning, Arnold, Rossetti, Morris, and Swinburne.

PROF. VERNON L. KELLOGG, of Leland Stanford University, scarcely needs introduction to the people of Kansas and the University of Kansas. He is the author of "First Lessons in Zoology," and of an "Elementary Zoology," both widely used; also, with Professor Comstock, of "Insect Anatomy," and, with President Jordan, of "Animal Life," besides a large number of technical scientific publications. He is recognized as one of the foremost men in entomology in this country, and as the authority on the order Mallophaga. His lectures will be popular and beautifully illustrated. He will also give three illustrated lectures on interesting phases of animal life, based largely on his own specialty of entomology: (1) Colors and patterns of insects and animals; uses of, and how produced. (2) Symbiosis and communism among insects and animals; communal life of animals, both of the same and of different species. (3) Reflexes: Instinct and intelligence of insects and animals. Possibly a fourth lecture on "The Simplest Organisms" will be given, or this subject may take the place of one of the above.

PROF. CAROLINE L. HUNT, of the University of Wisconsin, will lecture on the new and timely topic of "Home Economics."

Popular Lectures by Members of the Faculty.

Many of the professors offering instruction will give brief courses of afternoon lectures on popular phases of their subjects, often illustrated with stereopticon slides, which will be open to all members of the session. This will give students an opportunity to become generally informed regarding many subjects which time has not permitted them to study thoroughly.

CHANCELLOR FRANK STRONG: How our Constitution Grew up and How it Changes.

PROF. W. H. CARRUTH: The Nibelungen Lied (illustrated). Faust (illustrated).

PROF. E. MILLER: The Sun (illustrated). The Milky Way (illustrated).

PROF. A. S. OLIN: Horace Mann. Arnold of Rugby.

PROF. EUGENIE GALLOO: The Monuments of Paris (illustrated). Victor Hugo.

PROF. C. G. DUNLAP: As You Like It. Macbeth.

PROF. R. D. O'LEARY: General Characteristics of English Literature in the Eighteenth Century. The English Miracle Plays.

PROF. J. NAISMITH: Physical Condition of the Typical Student. Athletics for High Schools.

PROF. C. E. MCCLUNG: Problems of Heredity.

PROF. M. A. BARBER: Bacteria and Disease.

PROF. F. O. MARVIN: Roads—good and bad.

PROF. A. M. WILCOX: Greek Architecture in Ancient and Modern Times. (Two lectures, illustrated by stereopticon.)

PROF. F. W. BLACKMAR: The Trust Problem. Higher Education for a Farming Community.

PROF. E. HAWORTH: The Mineral Wealth of Kansas. Gold and Silver in the United States.

PROF. S. J. HUNTER: Relations between Plants and Animals. Protective Devices Used by Animals to their Struggle for Existence.

PROF. W. C. STEVENS: Gardening for Homes and Schools. Interesting Plants

PROF. EDGAR G. FRAZIER: Interpretative Recital, Phillips's "Paola and Francesca." Reading of "As You Like It."

PROF. W. A. GRIFFITH: The Fine Arts at the St. Louis Exposition.

PROF. E. M. HOPKINS: The Coming Oxford-American. Personal Initiative *versus* Method in Teaching.

PROF. E. H. S. BAILEY: The Role of Carbon Dioxide in Nature, with experiments.

PROF. E. BARTOW: Combustion; an experimental lecture. Water and its Constituents; an experimental lecture.

PROF. H. P. CADY: Liquid Air, with experiments. Radium and Radio-activity.

All these lectures, as well as those by scholars from abroad, and all other recitals and entertainments given under the auspices of the University, are open to those who have paid the general fee for the Summer Session.

Bible Chair Lectures.

During the first three weeks of the Summer Session, June 11 to July 1, the following lecture courses will be given by the incumbents of the Bible chair of the Christian church:

By Prof. W. C. Payne:

- I. The Days of the Apostles.
- II. The Parables and Miracles of Jesus.
- III. The Teachings of the Old Testament Sages.

By Mrs. W. C. Payne:

- I. The Women of the Bible.
- II. The History of Missions.
- III. Heroes of Missions.

PART IV.

**Institutions Connected with the University
and Under its Control.**

IX. The Libraries.

The libraries of the University contain 45,000 volumes and 30,000 pamphlets. These numbers are increasing as rapidly as funds will permit. An annual appropriation of \$7000 is devoted to the purchase of books, and about 4000 books and 2000 pamphlets will be added during the year 1903-'04. The books are selected with the greatest care, and the endeavor is made to furnish the students with the latest and best authorities in the various departments. The library is sufficiently large to enable the student to prosecute research and to furnish him substantial aid in his investigations. Source material in American and European history, and in other subjects is being constantly collected, and affords in some lines all necessary material for advanced original work.

The University Library. The University library is in the Spooner Library Building and is open every day in the year excepting Sundays and holidays. Library hours are from eight A. M. to six P. M.; Saturdays, from eight A. M. to twelve M. The reading-room is open from seven P. M. to ten P. M. when the University is in session. Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library by the students for three weeks. However, if a book is needed for a special purpose or a class reservation, it may be recalled by the librarian, and must be returned at once after notice is received.

BOOK-STACKS. There are five stories in the stack-room of the library, each eight feet high, making all the books within easy reach. The stacks and the flooring of these rooms are of steel, thereby making a perfectly fire-proof depository for the books. Books are classified and arranged on the shelves in the stack-room by the Dewey system of classification.

CATALOGUE. The catalogue of the library contains about 60,000 cards. It is arranged alphabetically both as to author and subject, and the author and subject cards are catalogued together. The cards are arranged in cases in the general reading-room, making them entirely accessible to both instructors and students.

THE GENERAL READING-ROOM. The general reading-room is a

large, comfortable, well-equipped and unusually well-lighted room, on the main floor of Spooner Library. It is furnished with 200 electric lamps. In this room are about 1000 volumes of general-reference books, cyclopedias, dictionaries, and Poole's index to periodical literature, and other books which are of special value to students for reference purposes.

DEPARTMENTAL READING-ROOMS. The departments of German, philosophy, Latin, English, and mathematics, have reading-rooms on the lower floor of the Library, and the departments of American and European history, sociology and economics have the whole of the upper floor of the building.

PERIODICAL ROOM. The University provides in this room 624 periodicals and learned-society publications and 158 state newspapers, all of which are at the service of instructors and students. The list of periodicals is very large, and includes almost all of the important publications of America and Europe.

OFFICES, ETC. Offices for the librarian and cataloguer and the accession room adjoin the general reading-room, and on the lower floor are store-rooms, etc.

DEPARTMENT LIBRARIES. Besides the books in Spooner Library building, there are eleven departmental libraries in the different buildings of the University. They are placed in close conjunction with the various laboratories and lecture-rooms, so as to be immediately accessible to students engaged in scientific work.

THE LAW LIBRARY. The law library is located in Fraser Hall at present, in a large room adjoining the lecture-rooms used by the School of Law. It contains upwards of 3000 volumes, and will be removed to the new law building in the fall of 1904.

The Lawrence Public Library. The public library of Lawrence is accessible to students. A new Carnegie building is in process of erection, and will be ready for occupancy very soon. This library now contains about 6,000 volumes, mainly of general literature and fiction, and, therefore, supplements the University library in that direction.

X. The Gymnasium.

The Gymnasium is as yet very inadequate to the needs of the University. It is located in Snow Hall, occupying all of the basement floor. The main exercise room is 86x36x14 feet, and was refitted last fall, so that it is now a pleasant room, well-lighted and heated. It may be divided into two rooms by large folding doors, permitting two classes to work at the same time. Another room has been set aside for small classes, or for special work by those who are unable to take the regular work, or who need special developing exercises.

The gymnasium is designed to benefit all students of the University, not only by giving an opportunity for general exercise and healthy recreation, but also by providing means of caring for the body, correcting faulty attitudes and functions, developing skill, physical judgment, and self-control. It provides, therefore, for specific training in view of any physical defects that may be remedied by proper care.

The department is under the supervision of a director who is himself a trained physician. He gives courses in physical education in the College designed especially for those who intend to teach.

Examinations. A thorough physical examination and measurement is offered each student and a record of results is kept as a basis for advice for exercise. The results are plotted on charts, so that the student may compare himself with others and note the progress he is making. Those taking work in the gymnasium or in the athletic field must pass a satisfactory examination on entering the sport. At any time that the health of the student demands it, he is debarred from taking part in any form of exercise that may injure him.

The Director's office is equipped with apparatus for taking measurements and for making tests of health, skill, and strength.

The gymnasium is open from eight A. M. to six P. M. each day excepting Sundays.

McCook Field. McCook Field, the gift of Col. John J. McCook, is situated only a short distance from the University and gives opportunity for all forms of outdoor athletics and sports. It contains a baseball diamond, a football field, a running-track, and facilities for field athletics. A grand stand and bleachers accommodate the spectators.

It is expected that the next building of the University will be a modern gymnasium, adequate to the needs of the University.

XI. The Museums.

The museums of the University are extensive and valuable. The collections were begun nearly thirty years ago by Dr. Francis H. Snow, and have been obtained chiefly during the past twenty-five years by University exploring parties in western Kansas, Colorado, New Mexico, British America, Alaska, and Greenland. The expeditions have been mainly under the direction of Dr. Francis H. Snow, Dr. Samuel W. Williston, and Prof. Lewis L. Dyche. By means of the material thus accumulated, a system of exchange has been established with leading institutions and naturalists in all parts of the United States, so that the cabinets contain a very satisfactory representation of the plants, insects, mammals, birds, minerals, and fossils, not only of the state of Kansas, but also the whole of North America.

Several expeditions were sent out in the summer of 1903. Dr. F. H. Snow conducted two parties for the collection of insects for the museum of entomology, one to Arizona and one to southwestern Kansas. Many new species were taken.

Mr. Handel T. Martin, assistant curator of the paleontological department, conducted a collecting expedition to South America, to work north from Punta Arenas, on the Straits of Magellan, into Patagonia. The expedition will devote itself especially to paleontology and zoology, and will be gone a year or more.

Prof. M. A. Barber led an expedition for botanical collections into Minnesota, North Dakota, Assiniboia, Alberta, and British Columbia. The greater part of the work, which was very successful, was done in the Canadian Rockies and Selkirks. The work was chiefly with flowering plants, but cryptogams were also collected.

Prof. Clarence E. McClung and Mr. M. W. Blackman, of the department of zoology, also made valuable collections for class use. Mr. Blackman collected ocean fauna in the Bermudas, and Professor McClung and Mr. Blackman together secured specimens in embryology and cytology at Wood's Holl, Massachusetts.

The collections are nearly all housed in the museum of natural history, completed in 1903 at a cost of \$75,000.

Entomology. The entomological collection is the largest connected with any educational institution in the United States. It contains more than 20,000 species and 200,000 specimens, representing all the different orders of insects. Nearly the whole of this material has been obtained by the expeditions conducted by the head

of the department of systematic entomology during the summer vacations of the past twenty-eight years, supplemented by a system of exchanges with collectors and museums in all parts of the world. The orders of Lepidoptera, Coleoptera and Diptera are especially well represented. Among the Lepidoptera there are nearly 100 "types" of species described by Grote and Henry Edwards, and among the Diptera there are nearly 600 "types" of species described by Williston, Townsend, W. A. Snow, Aldrich, Adams, Day, Whitney and Brown.

The cabinet of Coleoptera contains 8000 North American species and 2000 European and exotic forms, and the Lepidoptera and Diptera include 3000 species of each order.

The instruction in this department has special reference to the discrimination of the beneficial from the injurious species, and the extensive collections are of practical value to the agricultural and horticultural interests of the state as well as to the students of the University in the determination of the names and habits of our insect friends and foes.

There is no other university in the country where the advanced student of systematic entomology can find ready access to such an abundance of material for the prosecution of his researches. The collection occupies part of the second and third floors of the museum of natural history.

Zoology. The collection of large mammals indigenous to the North American continent is one of the most complete in the world. The specimens include the more common and well-known animals of the United States, an excellent representation of the animals of the Atlantic coast as far north as Cape Sabine and from the continent of Greenland. Also a series from the Pacific coast as far north as the Aleutian islands and from the interior of Alaska. This large collection is now being put on exhibition on the second floor of the new Natural History building. The collection will occupy the entire floor, which will be known as Mammal Hall. New material is constantly being added and mounted for study and exhibition.

Many thousands of specimens in the shape of skins, skeletons, and skulls, packed away for years in drawers and cases for the want of space for proper exhibition, are now on exhibition in the new museum building. These are available for students in zoölogy and comparative anatomy, and are used by instructors to illustrate their various lectures.

In the ornithological collections there are between 3000 and 4000 specimens, most of which are carefully protected in moth-proof cases. Many of these are unmounted skins, furnishing ample material for laboratory study when fresh specimens cannot be readily obtained.

There is also a fine series of skeletons, representing species in size from the shrews and bats to elephants and whales. These specimens are of great value to students in osteology and paleontology.

An alcoholic collection of marine radiates, mollusks and articulates from the Atlantic and Pacific coasts affords to the zoölogical students the means of investigating the anatomical structure of the leading forms in all the great types of the animal kingdom.

During the past summer extensive additions to the invertebrate collections were made by expeditions to Bermuda and to the northern Atlantic coast as noted above. While specimens from all the branches were collected, special attention was directed toward the Porifera, Cœlenterata, and Echinodermata. The teaching museum is now well supplied with representative specimens of all the invertebrate orders.

In the conchological cabinet are included nearly 1000 species of shells, from all parts of the world.

Paleontology. The collections in paleontology offer the best facilities not only for instruction in general stratigraphic geology, but also for special advanced work in systematic paleontology. The collections of invertebrates include about 2000 species, distributed among about 500 genera. They represent all of the principal geologic formations, but are especially rich in Kansas forms. The numbers of genera and species from the chief geologic groups are nearly as follows:

Tertiary, 80 genera, 200 species.

Cretaceous, 80 genera, 200 species.

Jurassic, 10 genera, 30 species.

Triassic, 25 genera, 75 species.

Permo-Carboniferous, 60 genera, 750 species.

Devonian, 80 genera, 200 species.

Silurian, 75 genera, 250 species.

Ordovician, 90 genera, 250 species.

Cambrian, 20 genera, 30 species.

The collection of fossil vertebrates, with but a few exceptions, is the most extensive in America, and in the Cretaceous forms is unequaled elsewhere. From the Miocene Tertiary of Kansas, Wyoming and South Dakota nearly all the known genera are represented. The Cretaceous animals are represented by many hundreds of specimens, including not a few of exceptional perfection and completeness. The mosasaurs include five genera and twelve or fifteen species, showing in most of them the complete anatomy. Of fossil birds, the best specimens known are in the museum, and some of the specimens of pterodactyls and plesiosaurs are unequaled in any other collection. From the Laramie Cretaceous, the most notable specimen is

a mounted skull of the gigantic dinosaur *Triceratops*. From the Permian and Carboniferous there are also a number of valuable specimens. All together, about 400 species of extinct vertebrates are represented in the museum.

Valuable additions are constantly being made to the collections, both of invertebrates and vertebrates, chiefly by field expeditions. Perhaps the most important of these is a new species of plesiosaur, which has been thoroughly restored and mounted as an entire skeleton. It is without doubt the finest specimen extant. All the collections have been gone over this year and a card catalogue prepared, so that reference to the specimens is much easier. The collection occupies the most of the upper floor of the Museum of Natural History.

Paleobotany. The collection in paleobotany is especially rich and valuable, representing thousands of specimens. The Dakota and Comanche Cretaceous series are the most extensive, and include many types of species and undescribed forms. In addition to the collection of Tertiary plants, there is a very large and valuable series of Carboniferous plants from Kansas, including many new forms yet unknown to science. The collection is placed with that of paleontology.

The Herbarium. The herbarium includes about 7500 specimens, identified and labeled, of flowering plants besides much material partly identified. The flora of the Western Rocky Mountains is especially well represented. There is also a considerable amount of cryptogamic material, including sets of economic fungi of North America, and of North American lichens. The herbarium is housed in Snow hall.

Geological Collections. The museum of economic geology and physical geology contains many hundred specimens. In economic geology there is a large collection of ores of various kinds, especially chosen to represent, first, the character of the ores, and second, the mode of ore formations. Specimens of almost all kinds of ores and other economic products, such as gypsum, coal, oil, etc., are included and arranged in accordance with the two ideas, first, of economic value, and second, of origin or formation. Specially to be mentioned in this connection is a very complete collection of lead and zinc ores and associated minerals from the Galena-Joplin district, which is the greatest field for mining zinc ore known in the world.

The petrographic collection contains about 2000 specimens of crystalline rocks from all parts of the world, including the largest collection ever made of granites, porphyrites, and basic dike rocks from the area of crystalline rocks in Missouri. There is also a large and specially selected collection of crystalline rocks from New Hampshire, and another collection from the Lake Superior region.

The mineralogical collection is divided into two groups, first, a working collection for students in the mineralogical laboratory, and second, an exhibitiv collection for the museum. The former contains fair specimens and material for use in the laboratory but representing all the leading classes of minerals, while the latter contains more pretentious and showy specimens more generally interesting to the public.

The Classical Museum. The Classical Museum contains full-sized plaster casts of the Hermes of Praxiteles, the Venus of Melos, the so-called Theseus of the Parthenon, three Metopes and fifty-five feet of the frieze of the Parthenon, the Lenormant statuette of Athena Parthenos, the Opheus relief, the Satyr and Mænad relief, the Borghese Warrior, Augustus in military dress, the so-called Germanicus, eighteen busts of Greek sculpture and Greek and Roman authors and emperors, two Tanagra figurines, and the Nike of Paionios inscriptions.

Models of the Acropolis of Athens, the east pediment of the Zeus temple at Olympia, the Victory of Paionios, and the Vatican Amazon.

Relief maps of Athens and Rome.

Laloux's restorations of Olympia, Defrasse's restorations of Epidauros, Pontrémoli's restoration of the Pergamon, and Weichardt's restoration of Pompeii.

Stuart & Revett's *Antiquities of Athens*, 363 plates; Penrose's *Athenian Architecture*, 47 plates; Inwood's *Erechtheum*, 39 plates; Bohn's *Propylæa*, 21 plates; Ross, Schaubert & Hansen's *Athena Nike Temple*, 13 plates; Michaelis's *Parthenon*, 15 plates; Cockerell's *Temples of Ægina and Bassæ*, 37 plates; Koldewey & Puchstein's *Temples of Lower Italy and Sicily*, 29 plates; Major's *Temples of Pæstum*, 25 plates; Adler's *Mausoleum*, 5 plates; Le Roy's *Ruins of the most beautiful monuments of Greece*, 60 plates; Fenger's eight colored plates of Doric architecture; the plates of the final reports of the excavations at Assos and Delphi, as far as they have yet been published; Piranesi's large engravings of the columns of Trajan and Marcus Aurelius; twelve photographs of architectural models in the Metropolitan Museum, New York.

A complete set (560 so far) of Brunn's plates of Greek and Roman sculpture; 55 Braun photographs of the Elgin marbles; 149 plates of the Sabouroff collection of sculpture, terra cottas, vases, and bronzes; Furtwängler's ancient gems, 67 plates; 82 plates of the silver vases and utensils found at Hildesheim and Boscoreale; 6 colored plates of Odyssey paintings found in Rome, Dodwell's; 30 views of Greece, in color; Lau's and Genick's 84 colored plates of Greek vases; 27 colored plates of Greek vases in the British Museum; Furtwängler and Loeschke's Mycenæan vases, 49 plates;

Harrison & MacColl's Greek vases, 43 plates; Furtwängler and Reichhold's large plates of Greek vases, as far as they have been published, 50; 11 colored plates of Greek and Etruscan terra cotta sarcophagi in the British Museum; Preller's four cartoons of wall-paintings of ancient Greek landscapes in the Albertinum, at Dresden; 39 plates of Monumenti Inediti and Antike Denkmæler vases, sculpture, and architecture; 650 photographs illustrating Roman topography and life.

A *facsimile* of the whole of the Bacchylides manuscript; 36 plates of other Greek manuscripts; 25 *facsimiles* of Biblical manuscripts in the British Museum; 30 *facsimiles* of the Flinders Petrie Egyptian Greek papyri; 62 plates of Latin manuscripts; Roehl's collection of oldest Greek inscriptions, many of them in *facsimile*.

Baumeister's monuments of classical antiquity, 95 plates and 2400 illustrations; 1800 stereopticon slides of Greek and Roman views, portraits, buildings, statues, paintings, vases, and manuscripts.

The classical museum is located in Frazier Hall, south wing, second floor.

XII. The University Geological Survey of Kansas.

CHANCELLOR FRANK STRONG, PH. D., *ex officio* Director.

ERASMUS HAWORTH, PH. D., Superintendent and State Geologist.

EDGAR H. S. BAILEY, PH. D., Chemist.

As explained below the geological survey is work undertaken for the good of the state without compensation to members of the faculty. It is state work and should be done by a state institution and without cost to the state other than necessary expenses. The department of Geology and Mining, through its head, who is also superintendent of the survey, works through and in conjunction with the survey to develop as large as possible the mineral resources of the state. The results already have been of very great value to the state, especially in the development of coal, oil, gas, Portland cement, gypsum and its products, clay manufacturies, etc.

The University Geological Survey of Kansas was organized by the Board of Regents of the University in 1894, under authority conferred by legislative act, and is supported by direct legislative appropriations. The object of the organization is to accomplish a geological survey of the state as rapidly as possible—a survey giving a complete exposition of the geological and mineralogical resources of the state, including all subjects of economic and scientific importance.

It is contemplated that the work will be done by members of the University Faculty and advanced students, so that the cost to the state will be a minimum. The faculty of the College recognizes such student work by giving credit for it, the same as for work done in the classrooms and laboratories of the University.

Work was first begun on the survey in the summer of 1893, and has been carried forward steadily ever since. During that summer the department of physical geology had three assistants doing field-work; in 1894, four; in 1895, twelve; in 1896, twelve; in 1897, seven; in 1898, five; in 1889, five; in 1900, four; in 1901, five; and in 1902, five. The subjects thus far investigated are: The general stratigraphy of the entire state; the coal-fields; salt; gypsum—on all of which special reports have been published. In addition, much work has been done in the investigation of the lead and zinc ore deposits of the state, and a report on the same is nearing completion. A large amount of work has also been done in investigating the oil and gas

territory in the southeastern part of the state, but at least one more summer must be devoted to field-work along this line before a report can be prepared.

The department of paleontology of the University has likewise done a large amount of work investigating the fossil fauna and flora of the state, and has published two reports on the subject.

The department of chemistry has made an investigation of the mineral waters of the state and has published a report on the subject.

The Survey has already published the following reports, all of which are for free distribution, the recipient paying transportation charges:

Volume I, 1896—Reconnaissance Report on General Stratigraphy of Eastern Kansas. (Edition exhausted.)	
Volume II, 1897—General Geology of Western Kansas..	24 cents.
Volume III, 1898—Special report on Coal.....	28 “
Volume IV, 1898—On Upper Cretaceous Paleontology..	32 “
Volume V, 1899—Special Report on Gypsum and Gypsum Cement Plasters.....	16 “
Volume VI, 1900—Carboniferous Invertebrates and Cretaceous Fishes.....	28 “
Volume VII, 1902—Mineral Waters.....	20 “
Report on Mineral Resources of Kansas for 1897.....	4 “
Report on Mineral Resources of Kansas for 1898.....	8 “
Report on Mineral Resources of Kansas for 1899.....	4 “
Report on Mineral Resources of Kansas for 1900-1901....	5 “

Volume I is devoted entirely to reconnaissance work in stratigraphy and a preliminary description of the general geology of eastern Kansas, with a short description of the oil- and gas-fields of the state and a preliminary catalogue of invertebrate fossils found in the Carboniferous Age.

Volume II is a similar description of the stratigraphy and other features of general geology of western Kansas, being a companion to volume I. It has a short chapter on some phases of Vertebrate Paleontology.

Volume III is a special report on coal, giving a general account of the stratigraphy of eastern Kansas, the most extensive yet published, and a detailed account of the coal-bearing strata of the state, methods of mining, the chemical and physical properties of Kansas coal, and other points of a like nature.

Volume IV is devoted entirely to the Paleontology of the Upper Cretaceous. It is profusely illustrated with plates and cuts of vertebrate fossils from western Kansas.

Volume V is a special report on gypsum and gypsum cement plaster, giving the results of about three years investigation. This is probably the best account yet published on this interesting product.

Volume VI is the second volume on paleontology, and is occupied jointly by Carboniferous invertebrates and Cretaceous fishes.

Volume VII is devoted entirely to the mineral waters of the state and gives a description, not only of the mineral waters of Kansas, but of mineral waters in general.

The series of annual reports began with a report on the mineral production of the state for 1897, and has been issued annually ever since, excepting one year. The reports for 1900 and 1901 were issued jointly. Largely they are repetitions of the same subjects, as each one of them contains a complete summary of the total state production to date. They cover the subjects of gold, silver, lead and zinc, coal, oil, gas, clay products, gypsum, hydraulic and Portland cements, building stone, and salt.

The report for the year 1902 was delayed in publication and thereby admitted a short report on the extraordinary flood of the Kansas river in May and June, 1903. The report for 1898 contains an extended description of Kansas salt as a special article, and similarly the report for 1902 has a specially prepared chapter on Portland cement.

PART V.

**Degrees Conferred and
Lists of Students.**

Degrees Conferred.

June, 1903.

Doctor of Philosophy.

Hamilton Perkins Cady.

Clarence Erwin McClung.

Master of Arts.

Charles F. Adams.

Herman Moore Langworthy.

Elijah Sheridan Andis.

Guila Carolyn Myers.

Milton D. Baumgartner.

Nadine Nowlin.

Edwin Boyer Branson.

Alpha Loretta Owens.

J. Ernest Courtright.

Ellen Pendleton.

Helen G. Gill.

Charles Leonidas Robbins.

Lizzie E. Goodnight.

George Malcolm Sharrard

J. Arthur Harris.

Louise Amy Smith.

May E. Hoss.

George Walter Stevens.

Henry Otto Kruse.

Benjamin Rogers Ward.

Bachelor of Arts.

Leverett Allen Adams.

Kate Dinsmoor.

Samuel Adams.

Mary Frances Dudley.

Donald Alford.

Elsie Evans.

William A. Anderson.

Lela Ford.

Elsie Elizabeth Barton.

Charles Albert Gardner.

Maude Luvan Bates.

Malcolm Garrard.

Leroy Worth Baxter.

Ethel Margaret Giles.

Mary Elizabeth Blue.

Leslie Alfred Gould.

Mary Alice Boyle.

James Walter Gowans.

Lee Braerton.

Jessie Lee Hart.

Edwin Boyer Branson.

Stella Harriett Hayes.

Helen Louise Calhoun.

Isabelle Hazen.

Charles Ernest Carpenter.

Jesse Heinecke.

Earl Carper Chaney.

Mabel Selby Henry.

Helen Clarke.

Angie Horn.

Mary Clarke.

Cecil Ernest Houdyshel.

Mabel Conboy.

Eleanor Humphrey.

Carl William Cramer.

Martha Jackman.

Clarence Cory Crawford.

Julian Jenkinson.

Bachelor of Arts—Concluded.

Harry Samuel Kennedy.	Angie M. Scammon.
Lizzie Selden Kilgore.	Frank Schaeffer.
Clara Fredericka Klaumann.	John Schroeder.
Cecil Prescott Leland.	Watson Sellards.
Elizabeth Leslie.	Katherine Sellers.
Elsie Flo Lowry.	Oscar B. Seyster.
Elmer Verner McCollum.	Raymond M. Sheffield.
Ida Elizabeth McKnight.	Miriam Sheldon.
Bessie Means.	William Mentry Shepherd.
Rachel Elnora Mentzer.	Stuart Simpson.
Roy Edwin Merwin.	Solon William Smith.
Anna S. Mickey.	Gertrude Zella Spencer.
Royal John Montgomery.	Maude Spinning.
James Wilson Murphy.	Helen Stafford.
Carl Hiestand Myers.	Mary B. Sweet.
Ellen Alicia Nolan.	Frances E. Taylor.
Nadine Nowlin.	George J. Trombold.
Millie Paddock.	Jennie May Van Fleet.
Miriam Augusta Palmer.	Wilbur De Wain Vincent.
Jessie Anna Parker.	Jennie May Walton.
Samuel Ray Parvin.	Anna Elizabeth Warfield.
Maude A. Price.	Martha Whitney.
Grace Elizabeth Quarterman.	Harriet Dorothy Williams.
Clyde Kitt Rodkey.	Helen Thompson Williams.
Pearl Rogers.	Sarah Carmine Wolfe.
Eugene Everett Sallee.	William H. Woodbury.
Clarence G. Sanborn.	Abbie Edith Woodin.
Emerson Sanborn.	Inez E. Woods.
Elmer B. Sanford.	Catherine Zook.
Howard Anson Sawyer.	

Bachelor of Arts in Law.

Raymond James De Lano.	Michael Joseph Gernon.
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Bachelor of Laws.

Fred Horace Ayers.	Christian Dubach, jr.
Ray Henry Beals.	Charles P. Dunham.
Claude M. Brobst.	Charles L. Faust.
George Tilden Brown.	Isaac Thomas Felts.
John Sheridan Burger.	Charles Chandler Gebce.
Charles K. Cary.	Clyde Campbell Glandon.
J. E. Dudley Doolittle.	Henry Lewis Goddard.

Bachelor of Laws—Concluded.

Louis W. Johnson.	Day H. Pierson.
Sciichi Kaneko.	Joseph Cowles Plumb.
William Bryant Kennedy.	Hoyt A. Poorman.
James George Kerr.	Charles Henry Quier.
Thomas Brooks Lamborn.	John Karl Rankin.
James Quinton Louthan.	Joseph Reeves Ramsey.
Joseph Oliver Majors.	Alfred Morton Seddon.
Lester A. Maris.	Ross Benn Smith.
John V. McKinney.	Charles William Spencer.
Ralph Edmond McTaggart.	Samuel Grandy Toole.
Wilbur Francis Miller.	George Morton Vinton.
Judson G. Osborn.	Charles Edwin Wakefield.
Jay N. Patmor.	George Henderson Wark.
Joseph Peach.	Charles Wierenga.
James Edgar Phillips.	Lucy A. Wight.

Bachelor of Science.

Ernest Henry Barkman.	Burton McCollum.
Boyd Betcher.	Harry Myers.
George Robert Chapin.	Woodson Rhea.
Almon Warren Copley.	Edward Shepherd.
Charles Ives Corp.	William Gordon Sherret.
William Corydon Edwards, jr.	Eugene Stacy.
Franklin Maginnis Farwell.	Norman Lloyd Stewart.
Frank Flanders.	Charles Clark Tillotson.
Roy Cephas Harding.	Varanus Arthur Wolcott.
L. D. Havenhill.	Burton Lee Wolfe.
Corra Chester Jones.	Albert Harrison Worley.

Pharmaceutical Chemist.

Alvin John Clark.	Arthur T. Noble.
George Daniel Cochran.	Wilton Edgar North.
Orlin W. Defever.	Edward Otis Perkins.
Bruce Northcraft Gleissner.	Walter Reese.
Perl E. Kaler.	Earl L. Schaefer.
Dwight Clinton Kennard.	James Arthur Searcy.
Rolla Randall Lindburg.	Homer E. Stevens.
Jay Means.	Ina Stilson.
James L. Murray.	Carl Wakefield.
Columbus W. Nester.	

Bachelor of Music.

Mary Love Boaz.

Rosa Bond.

Bachelor of Painting.

Florence Elizabeth Herrington.

Certificates in Medicine.

B. Joseph Blades.

Belle Egan.

Roy Cater.

Fred Alexander Forney.

Dowdal H. Davis.

Theodore Kroesch.

Joseph W. Davis.

William Loeser.

Oscar A. Duncan.

Bert William Voeth.

Teacher's Diploma.

Elsie Elizabeth Barton.

Helen Blair.

Helen Maud Clarke.

Mary Patterson Clarke.

James W. Gowans.

Stella Harriet Hayes.

Angie Horn.

Eleanor Humphrey.

Martha S. Jackman.

Lizzie S. Kilgore.

Clara F. Klaumann.

Elizabeth Leslie.

Rachel E. Mentzer.

Anna S. Mickey.

James W. Murphy.

Guila C. Myers.

Miriam A. Palmer.

Millie Paddock.

Samuel R. Parvin.

Grace E. Quarterman.

Pearl Rogers.

Clarence G. Sanborn.

Emerson Sanborn.

Helen Stafford.

Frances E. Taylor.

Jennie M. VanFeet.

Wilbur D. Vincent.

Jennie M. Walton.

Anna E. Warfield.

Martha S. Whitney.

Carmie S. Wolfe.

Abbie E. Woodin.

Roll of Students.

The Graduate School.

°Non-resident students.

*Seniors, The College, who have completed sufficient work for the A. B. degree and are doing graduate work.

- *Abel, Lucy, A. B. '04, University of Kansas,
Zoology, ... Salina.
- Adams, Charles F., A. B. University of Missouri, *Entomology*, ... Independence, Mo.
- Adams, Leverett A., A. B. '03, University of Kansas, *Zoology*, ... Lawrence.
- *Alder, Louise M., A. B. '04, University of Kansas, *English History*, ... Lawrence.
- Andis, Elijah S., A. B. '03, University of Kansas, *History*, ... Lecompton.
- Becker, Cora E., A. B. '93, University of Kansas, *Education, Biology*, ... Lawrence.
- Blair, James Williams, A. B. '00, Tabor College, *Latin, English*, ... Topeka.
- Carpenter, Charles Ernest, A. B. '03, University of Kansas, *Sociology*, ... Wellsville.
- Clarke, Helen M., A. B. '03, University of Kansas, *English, Philosophy*, ... Lawrence.
- Clarke, Mary P., A. B. '03, University of Kansas, *History, Philosophy*, ... Lawrence.
- *Cowdrick, Edward S., A. B. '04, University of Kansas, *History, German*, ... Lawrence.
- Cramer, Carl W., A. B. '03, University of Kansas, *Geology*, ... Independence.
- Crawford, Clarence Cory, A. B. '03, University of Kansas. *History*, ... Lawrence.
- Dinsmoor, Kate, A. B. '03, University of Kansas, *English*, ... Lawrence.
- Edenburg, Frank, A. B. '03, Bethany College, *Mathematics*, ... Lindsborg.
- Filkin, Walter W., A. B. '01, University of Kansas, *Sociology*, ... Rosedale.
- Gustafson, Carl F., A. M. '02, University of Kansas, *Chemistry*, ... McPherson.
- °Hanna, Thomas Bertram, A. B. '01, University of Kansas, *Sociology*, ... Salem S. D.

- Hart, Jessie Lee, A. B. '03, University of Kansas, *Latin, Greek*, ... Newton.
- Hazen, Isabelle, A. B. '03, University of Kansas, *Education, English*, ... Lawrence.
- *Hill, Murray G., A. B. '04, University of Kansas, *English, Philosophy*, ... Eudora.
- Horn, Angie, A. B. '03, University of Kansas, *English*, ... Mankato.
- Houdyshel, Cecile E., A. B. '03, University of Kansas, *Entomology, Education*, ... Lawrence.
- Johnson, Elijah N., A. M. '95, Drake University, *Mathematics, Physics*, ... Holton.
- Keplinger, Fred, A. B. '00, University of Kansas, *Mathematics*, ... Oskaloosa.
- Lawrence, Nettie M., A. B. '00, University of Kansas, *Education*, ... Garden City.
- *Livers, William H., A. B. '04, University of Kansas, *Sociology*, ... Mankato.
- Merwin, Ray E., A. B. '03, University of Kansas, *Sociology*, ... Lawrence.
- *Metcalf, George L., A. B. '04, University of Kansas, *Geology*, ... Wellington.
- Morgan, Rose Ruth, A. B. '94, University of Kansas, *German*, ... Leavenworth.
- McCollum, Elmer V., A. B. '03, University of Kansas, *Chemistry*, ... Lawrence.
- McKnight, Ida E., A. B. '03, University of Kansas, *English*, ... Hiawatha.
- Neuenschwander, Elise, A. B. '98, University of Kansas, *French, German*, ... Kansas City.
- Owens, Alpha Loretta, A. M. '03, University of Kansas, *French*, ... Lawrence.
- Palmer, Miriam A., A. B. '03, University of Kansas, *Entomology*, ... Lawrence.
- Pendleton, Ellen, A. M. '03, University of Kansas, *English*, ... Lawrence.
- Pilcher, Blanche, A. B. '01, University of Kansas, *Education, Sociology*, ... Lawrence.
- *Potter, Ulysses G., A. B. '04, University of Kansas, *Mathematics*, ... Hiawatha.
- *Rhodes, Charles H., A. B. '04, University of Kansas, *History*, ... Wellington.
- *Rose, Dean H., A. B. '04, University of Kansas, *Botany*, ... Ionia.

- Sanborn, Charles E., A. B. '03, University of
Kansas, *Entomology*, ... Girard.
- Sawyer, Howard A., A. B. '03, University of
Kansas, *Sociology*, ... Haven.
- Scott, Mabel W., A. B. '95, University of
Kansas, *Latin*, ... Lawrence.
- Sellards, Andrew Watson, A. B. '03, Univer-
sity of Kansas, *Chemistry*, ... Lawrence.
- Seyster, Oscar B., A. B. '03, University of
Kansas, *European History*, ... Concordia.
- °Smith, Lizzie W., A. B. '76, University of
Kansas, *Sociology*, ... Stockton.
- Vincent, Wilbur D., A. B. '03, University of
Kansas, *Education*, ... Lawrence.
- Welin, John E., A. M., Augustina College,
Chemistry, ... Lindsborg.
- * Willis, George H., A. B. '04, University of
Kansas, *Greek*, ... Kingman.
- Bunton, Lillian, A. B. '04, University of Kan-
sas, *Botany*, ... Lawrence.
- Guernsey, George Thacher, jr., A. B. '04, Uni-
versity of Kansas, *European History*, Independence.
- Hedger, Florence Amanda, A. B. '04, Univer-
sity of Kansas, *Botany*, ... Iola.
- * Mathes, Cora, A. B. Nickerson College,
Latin, ... Nickerson.
- * Nutting, George W. Murrell, A. B. '04, Uni-
versity of Kansas, *History*, ... Hiawatha.
- * Pendleton, Olive, A. B. '04, University of
Kansas, *English*, ... Lawrence.
- * Taylor, Cora A., A. B. '04, University of
Kansas, *Entomology*, ... Lawrence.

The College.

SENIORS.

Abel, Lucy, ...	Salina.
Alder, Mary Louise, ...	Lawrence.
Allen, Karl, ...	Argentine.
Ashbaugh, Charles Whedon, ...	Fort Scott.
Barnett, Fred Eastes, ...	Goodland.
Barrett, Jennie M., ...	Frankfort.
Basye, Arthur Herbert, ...	Lawrence.
Bennett, Jennie Bird, ...	Effingham.
Brook, Charles Francis, ...	Blue Mound.
Bunton, Lillian, ...	Lawrence.
Burford, Frank Edmund B., ...	<i>Guthrie, Okla.</i>
Burress, James Homer, ...	Williamsburg.
Burwell, Mary, ...	<i>Enid, Okla.</i>
Campbell, Ray, ...	Wichita.
Chambers, Roscoe C., ...	<i>Kansas City, Mo.</i>
Chaney, Everett Burns, ...	Independence.
Clardy, John William, ...	Powhattan.
Clark, Kate Cecelia, ...	Lawrence.
Clifford, Wilbur Ray, ...	Kansas City.
Coffman, Mabel, ...	Lawrence.
Coleman, Virginia Elizabeth, ...	Clay Center.
Collins, Mary, ...	Lawrence.
Copeland, Ernestine Ione, ...	<i>Little Rock, Ark.</i>
Cowdrick, Edward S., ...	Russell.
Cowley, Clare Joseph, ...	Columbus.
Creager, Marvin, ...	Lawrence.
Dodds, Caryl J., ...	Thayer.
Douthart, Henrietta M., ...	Willis.
Duke, Gussie, ...	Lawrence.
Easton, Walter D., ...	<i>Atwood, Ill.</i>
Edson, Charles Leroy, ...	Olathe,
Ford, Thomas B., ...	Girard.
Forest, Mary Florence, ...	Thayer.
Goddard, Clarence Brock, ...	Leavenworth.
Greenlee, John, ...	Idana.
Griesa, Ora Nell, ...	Lawrence.
Guernsey, George Thacher, jr., ...	Independence.
Hedger, Florence Amanda, ...	Iola.
Hegler, Benjamin Franklin, ...	<i>Guthrie, Okla.</i>
Hill, Murray Gardner, ...	Eudora.
Hoffman, Henry William, ...	Holton.

Holsinger, Edna Frances, ...	Rosedale.
Holsinger, Maud Agnes, ...	Rosedale.
Householder, Fred Clinton, ...	Clay Center.
Hulbert, Herman, ...	Beloit.
Humphrey, Myron Embeck, ...	<i>El Reno, Okla.</i>
Iles, Victor, ...	Independence.
Jacoby, Clark E., ...	Iola.
Jaycox, Caroline Elizabeth, ...	Elkhorn.
Jeans, Philip, ...	Lawrence.
Johnson, Mary E., ...	<i>Kansas City, Mo.</i>
Johnson, Will Garfield, ...	Oskaloosa.
Kellogg, Mary Virginia, ...	Emporia.
Kilby, Karl E., ...	Council Grove.
Killgore, Albert Russell, ...	Peru.
Kindell, Ralph, ...	Howard.
Kline, Charles William, ...	Emporia.
Kuns, George D., ...	McPherson.
Lauterbach, Martha, ...	Colby.
Lehman, Neva Elena, ...	Newton.
Livers, William Henry, ...	Mankato.
Medes, Grace, ...	<i>Kansas City, Mo.</i>
Miller, Bessie Eunice, ...	Lawrence.
Miller, Pearl DeEtte, ...	El Dorado.
Mossler, Hettie, ...	Lawrence.
Murphy, Ethel L., ...	Edwardsville.
Murray, Earle Walter, ...	<i>Joplin, Mo.</i>
McLaughlin, Mabel, ...	Hiawatha.
McNair, Claudia Estelle, ...	Lawrence.
McNaughton, Malcolm Nathaniel, ...	Tonganoxie.
Nutting, George Murrell, ...	Hiawatha.
Olcott, Stella, ...	Lyndon.
Oldroyd, Roxy H., ...	Arkansas City.
Olin, Eva, ...	Lawrence.
Patterson, Eleanor J., ...	Fort Scott.
Peters, Ethel Clara, ...	Mankato.
Piatt, Sarah Alice, ...	Lawrence.
Plumb, Inez Rhya, ...	Lang.
Porter, David Chalmers, ...	Idana.
Potter, Ulysses G., ...	Hiawatha.
Rhodes, Charles Harker, ...	Wellington.
Roberts, Bertha Viola, ...	Osawatomie.
Rose, Dean Humboldt, ...	Ionia.
Scammon, Richard, ...	<i>Kansas City, Mo.</i>
Schall, Bertha Louise, ...	<i>Kansas City.</i>
Smith, Hazel Kirke, ...	Stockton.

Smothers, Trussie,	Lawrence.
Stanton, Mida,	Lawrence.
Swenson, Otis Dexter,	Clay Center.
Taylor, Cora Alice,	Nickerson.
Unruh, Agnes,	Larned.
Virmond, Bertha Jones,	Hays City.
Wangerien, Stella Sophia,	Vining.
Wasson, Jennie,	Sterling.
Whipple, Attis A., jr.,	Kansas City, Mo.
White, Ambrose E.,	Leavenworth.
Wilhelmi, Nellie Marie,	Lawrence.
Willis, George Hatheway,	Kingman.
Wilson, Jasper Bird,	Perry.
Wilson, Rea,	Abilene.
Winton, Roy Walter,	Guthrie, Okla.
Wood, Bessie Marion,	Strong City.
Woodin, Clara,	Lawrence.

Seniors, 101.

JUNIORS.

Alford, Joseph Savage,	Lawrence.
Anderson, Carrie Olena,	Morganville.
Anderson, Charles O.,	Coffeyville.
Ardery, Lois,	Hutchinson.
Ashley, Mabel,	Pratt.
Axtell, Lilian,	Newton.
Bailey, William Hotchkiss,	Lawrence.
Barber, Mabel,	Lawrence.
Bartholow, Wharton,	Williamsburg.
Bartlett, Samuel E.,	Perth.
Beach, Bert,	Olathe.
Bechtel, Ada,	Hiawatha.
Beckwith, Abbey,	Hiawatha.
Behimer, Otto,	Portland.
Bell, Bonnie,	Lawrence.
Bowden, Bessie,	Lawrence.
Bowen, Clara,	Wichita.
Bower, George,	Delphos.
Bowers, Ephraim M.,	Centropolis.
Boyle, Ellen,	Boyle.
Brown, Katie,	Lawrence.
Burrows, Montrose,	Halstead.
Carr, Cora May,	Leavenworth.
Carruth, Constance,	Lawrence.
Cellier, Capitola,	Liberal.
Cook, Cora Nina,	Scranton.

Copley, Mary Cecilia, ...	Lawrence.
Cramer, Maude, ...	Lawrence.
Crawford, Irene, ...	Pratt.
Cross, Roy, ...	Ellis.
Cunningham, Kate Belle, ...	Kansas City, Mo.
Dean, Roger, ...	Peabody.
Deming, Claude, ...	Oskaloosa.
Dillon, Gertrude, ...	Eureka.
Dryden, Daisy D., ...	Wichita.
Duerson, Fannie, ...	Hiawatha.
Faragher, Fred W., ...	Sabetha.
Fones, Jennie G., ...	Lyons.
Fryhofer, Emma Louise, ...	Randolph.
Gabrielson, Esther, ...	Hutchinson.
Gabrielson, Mary L., ...	Hutchinson.
Gatlin, Dana Elizabeth, ...	Paola.
Gentry, Robert Ernest, ...	Minneapolis.
Gowans, Ralph	Lawrence.
Graham, Agnes, ...	Ottawa.
Greene, Marie A., ...	Topeka.
Gurnea, Zilora Maggie, ...	Belleville.
Hammond, Winifred, ...	Olathe.
Hansen, Kate Ingeberg, ...	Logan.
Hartman, Frank A., ...	Kansas City.
Hayes, Lucile, ...	Lawrence.
Hayward, Grace, ...	Salina.
Henrichs, B. Edna, ...	Humboldt.
Hill, Lesley.	Lawrence.
Hirst, Eva, ...	Kansas City.
Hoar, Daisy, ...	Lawrence.
Hosford, Nadine, ...	McLouth.
Hull, Vera, ...	Wichita.
Jenkins, Mabel, ...	Kansas City, Mo.
Johnson, Helen, ...	Oskaloosa.
Johnston, Eliza Margaret, ...	Delphos.
Kile, Harry L., ...	Canton.
Kimble, Pearl, ...	Paola.
Knott, Joseph Israel, ...	Yates Center.
Kreamer, Laura E., ...	Arkansas City.
Leidigh, Alma M., ...	Hutchinson.
Leinbach, Chester A., ...	Onaga.
Levan, Edith, ...	Lawrence.
Lindner, Ethel, ...	Lawrence.
Lindsay, Celia, ...	Lawrence.
Lindsey, Lydia, ...	Mortimer.

Lucas, Paralee, ...	Lawrence.
Miller, Lena Vivian, ...	Lawrence.
Moodie, Roy L., ...	Wellington.
Morrison, Maud L., ...	Lawrence.
Morse, Eleanor F., ...	Mound City.
McCarty, Edith, ...	Iola.
Newman, Mildred, ...	Kansas City.
Nye, Ella M., ...	Hiawatha.
Palmer, Emma, ...	Lawrence.
Peacock, Juanita Mildred, ...	Atchison.
Rambo, Josie, ...	Winfield.
Robb, William S., ...	Lawrence.
Roberts, Vivian C., ...	Lawrence.
Rose, Alice, ...	Fort Scott.
Russell, Marion Fore, ...	Great Bend.
Searles, Josephine Horton, ...	<i>Kansas City, Mo.</i>
Sellards, Myrtle, ...	Lawrence.
Sexton, Ray, ...	Minneapolis.
Stevenson, Margaret, ...	Iola.
Street, Margaret Hortense, ...	Lawrence.
Van DeMark, Martin V. B., ...	Clyde.
Walling, Lalia Viola, ...	Lawrence.
Walton, Lulu, ...	Wellsville.
Warren, Carrie, ...	<i>Oklahoma City, Okla.</i>
Washburn, Edetha, ...	Ottawa.
Wilder, Sarah Abigail, ...	Hiawatha.
Williams, May, ...	Osawatomie.
Winship, Eugenia, ...	Lawrence.
Wirt, Edith, ...	<i>Kansas City, Mo.</i>

Juniors, 100.

SOPHOMORES.

Alder, Helen A., ...	Lawrence.
Bailer, Lloyd, ...	<i>Kansas City, Mo.</i>
Baker, Eva, ...	Garden City.
Barlow, Frank, ...	Wellington.
Barnett, Ada, ...	Atchison.
Bathey, Lita Alleen, ...	Olathe.
Benn, Rara, ...	La Crosse.
Bennett, Mary J., ...	Pittsburg.
Bigelow, Oliver, ...	Lawrence.
Bowen, Mary Amelia, ...	Independence.
Boyle, Grace I., ...	Boyle.
Brewster, Frances, ...	Thayer.
Brunner, Emile, ...	Onaga.
Cardwell, Della D., ...	St. John.

Carter, Anna May,	Reno.
Cates, Ada,	Chanute.
Cleveland, Mary Edith,	Burlington.
Collins, Olive,	Lawrence.
Cooper, Lawrence,	Peabody.
Cureton, Nellie King,	Lawrence.
Davies, Sophia,	Lebo.
Dillon, Nelly,	Eureka.
Dinsmoor, Edna,	Lawrence.
Dixon, Marguerite,	Wichita.
Draper, Albert,	Oswego.
Eby, Benton A.,	Howard.
Eckley, Bessie,	Leavenworth.
Fox, Myrtle,	Lawrence.
Francis, John William,	Muncie.
Gafford, Earl,	Minneapolis.
Garrett, Violetta,	Lawrence.
Gibson, William Griffith,	Chapman.
Gilmore, Gertrude,	Lawrence.
Glenn, Janet,	Paola.
Harris, Nellie Lois,	Lawrence.
Hazen, Leonard,	Lawrence.
Heinecke, Edwin Blakely,	Jewell City.
Heinzman, Harry L.,	Topeka.
Hoar, Ethel,	Lawrence.
Hodgin, Helen M.,	Centralia.
Hosford, Katherine,	Lawrence.
Hoskins, Elsie M.,	Lawrence.
Hudson, jr., Thomas J.,	Fredonia.
Humphrey, Karl E.,	El Reno, Okla.
Hunt, George James,	Kansas City, Mo.
Ise, Charles Daniel,	Downs.
Jones, Effie,	Howard.
Kayser, Jesse W.,	Milton.
Kent, Mabel Etta,	Paola.
Kilgore, Inez,	Wichita.
Kiser, Florence,	Clinton.
Lahmer, Frances E.,	Lawrence.
Lamborn, Clem,	Leavenworth.
Langworthy, Amy E.,	Leavenworth.
Legerwood, Vivian,	Norton.
Makimson, Lista	Kansas City.
Mathes, Cora A.,	Nickerson.
Merwin, Ivah,	Stockton.
Miller, Vanroy W.,	Lawrence.

Mitchell, Florence B.,	Iola.
Mulvihill, Celia,	Perry.
McDonald, James E.,	Peabody.
McKee, Lena,	Clay Center.
McVey, Walter,	Independence.
Nash, Ella,	Lyons.
Newman, Calvin Hood,	Emporia.
Noyes, Elmira,	Portsmouth, Va.
Olander, Maude	Kansas City.
Parkhurst, Jean M.,	Topeka.
Phillips, Frank,	Lawrence.
Pilcher, Georgia E.,	Lawrence.
Platz, W. A. Stanley,	Howard.
Potts, Nellie Brander,	Paola.
Reed, Trilla,	Iola.
Riley, Carl E.,	Paola.
Robertson, William Rees B.,	Manchester.
Robinson, David B.,	Lawrence.
Roller, Harry,	Lecompton.
Rose, Rial Catlin,	Ionia.
Rupert, Frank F.,	Arkansas City.
Satterthwaite, Walter B.,	Girard.
Schmidt, Mary,	Humboldt.
Shank, Floyd,	Lawrence.
Shaw, William Percival,	Leavenworth.
Shields, Florence,	Garnett.
Shippy, Harvey,	Woodbine.
Siler, Charles,	Lawrence.
Sirpless, Eleanor,	Lawrence.
Smith, Florence E.,	Lawrence.
Smith, Mary Grace,	Hutchinson.
Stanton, Fred Hadley,	Lawrence.
Starin, William Alfred,	Netawaka.
Stelter, Benjamin F.,	Delphos.
Stelter, Grace May,	Delphos.
Sterling, Genevieve,	Lawrence.
Stevens, Vera,	Lawrence.
Stevenson, Hazel,	Iola.
Tuthill, Herbert,	Salina.
Uhrich, Burns,	Atchison.
vonUnwerth, Margarethe,	Kansas City, Mo.
VanCleave, Maude Beryle,	Kansas City.
VanFleet, Charles L.,	Kingman.
VanNuys, Esther,	Osawatomie.
Virmond, Georgia,	Hays City.

Weatherby, LeRoy S.,		Lawrence.
Weaver, Aileen,		Lawrence.
West, Will G.,		McPherson.
Wilhelmi, Alwine,		Lawrence.
Wilson, Christmas,		Iola.
Wulfekuhler, Fred O.,		Leavenworth.

Sophomores 110.

FRESHMEN.

Adams, Winifred,		<i>Kansas City, Mo.</i>
Agnew, Zorah Lucy,		Minneapolis.
Alford, Theodore Crandall,		Lawrence.
Andrews, Austin Chandler,		Beloit.
Bailey, George Corbin,		Eureka.
Baldrige, Myrtle,		<i>Kansas City, Mo.</i>
Barker, Louise,		Girard.
Barnett, Ruth,		Wellington.
Bartholow, Edmond Montgomery,		Williamsburg.
Beeler, Dolly H.,		Lawrence.
Bell, Blanche,		Lawrence.
Belt, George,		Pawnee Rock.
Bender, John F.,		Holliday.
Benson, William Horace,		Lawrence.
Berger, Hedwig F.,		Kansas City.
Bernhard, Alva D.,		Lawrence.
Bernhard, Lillie,		Lawrence.
Bernhard, Rillie,		Lawrence.
Bingler, Alberta Luckey,		Lawrence.
Blair, Gracia,		Lawrence.
Bolton, Nita,		Scranton.
Bousfield, Midian Othello,		Kansas City.
Bowers, Benjamin Franklin,		Centropolis.
Brannon, William A.,		Lawrence.
Brawley, Mark A.,		Frankfort.
Brewster, Earl,		Chanute.
Brock, Ivy Grace,		Girard.
Brooke, Marienne,		<i>Kansas City, Mo.</i>
Brown, Anna,		Holy Cross.
Brownlee, Clarke,		Horton.
Burdick, Harold de Forest,		Lawrence.
Campbell, Alice Birdine,		Wichita.
Campbell, Mary B.,		Severance.
Carpenter, Clara,		Lawrence.
Carter, Anna Mabel,		Lawrence.
Charvoz, Bertha,		Osage City.

Colman, Clara, ...	Lawrence.
Conklin, Iola Belle	McPherson.
Cook, Floyd, ...	Anthony.
Cook, Jerry Hewett, ...	Anthony.
Cory, Paul McPherson, ...	Parsons.
Crofoot, Pearl, ...	Wilson.
Cunnick, Ross, ...	Sabetha.
Curl, Frankie, ...	Phillipsburg.
Cushing, Charles, ...	<i>Kansas City, Mo.</i>
Daily, Dio D., ...	Columbus.
Dart, Edna R., ...	Lawrence.
Davis, Marietta Syrl, ...	Holton.
DeMoss, Edith S., ...	Thayer.
Doubleday, Caroline, ...	Pittsburg.
Douglas, Roy O., ...	Mound City.
Drummond, Guy, ...	<i>Darlington, Okla.</i>
Dunning, Ethel May, ...	Sibley.
Edmonds, John, ...	Liberal.
Edson, George Thomas, ...	Olathe.
Ellis, Ward, ...	Beloit.
Engle, Earl William, ...	Topeka.
Essick, Inez Louise Wyman, ...	Kanopolis.
Everett, Wilimina, ...	Fort Scott.
Ewing, Frank, ...	Olathe.
Finch, Howard A.	Neal.
Fisher, Wilhelm, ...	Lyons.
Foraker, Nora, ...	Wellington.
French, Bernice M., ...	Lawrence.
Funk, Neva, ...	Iola.
Gage, John Bailey, ...	<i>Kansas City, Mo.</i>
Getty, Carol, ...	Ellsworth.
Gilchrist, Irene, ...	<i>Kansas City, Mo.</i>
Goldman, Heim, ...	Kansas City.
Gray, Frances E., ...	Lawrence.
Greenough, Birdie O., ...	Wilson.
Gregg, Ernest, ...	Lawrence.
Gross, Ethel, ...	<i>St. Joseph, Mo.</i>
Hall, Charles S.	Seneca.
Hardiman, Edward James, ...	Topeka.
Harris, Annie, ...	Lawrence.
Hatfield, Merle E., ...	Wichita.
Havens, Hellen, ...	Minneapolis.
Hawk, Anna M., ...	Lawrence.
Hawkinson, John, ...	McPherson.
Heeney, Edwin Joseph, ...	Severance.

Hille, Charles, ...	WaKeeney.
Hodgson, Blanche H., ...	Lawrence.
Holland, Esther, ...	Neodesha.
Hosford, Clitus, ...	Lawrence.
Houghton, Howard, ...	Beloit.
Howell, Cora, ...	<i>Blackwell, Okla.</i>
Ingleman, Anna A., ...	Lawrence.
Jackson, Addie, ...	Horton.
Jackson, Ruby, ...	Horton.
Jackson, Ruth, ...	Horton.
Jones, Hugh, ...	Chanute.
Johnson, Carlos, ...	Arkansas City,
Jones, Hal, ...	Iola.
Jones, Lucy Isabella, ...	Lawrence.
Jones, Owen C., ...	Everest.
Kanaga, Elizabeth Clara, ...	Lawrence.
Kaul, Leonard, ...	Holton.
Kellogg, Joseph Mitchell, ...	Emporia.
Kiefer, Norman, ...	Lawrence.
Kinkaid, Roy	Wichita.
Kinne, Lou, ...	Moran.
Klingberg, Frank Joseph, ...	Dillon,
Knight, Louise, ...	<i>Kansas City, Mo.</i>
Kuns, Fern, ...	McPherson.
Lander, Addie F., ...	Newton.
Landrum, Charles Hansford, ...	Frankfort.
Lane, Lenora Z., ...	Lawrence.
Lapham, Wilbur, ...	Chanute.
Lasley, Hallie, ...	Kansas City.
Lasley, Katherine, ...	Kansas City.
Lawrence, Gaylord Taylor, ...	Garden City.
Lindsay, Merrill, ...	Topeka.
Linton, Edgar Alison, ...	Lawrence.
Linton, Elfrida, ...	Lawrence.
Linton, Nita, ...	Lawrence.
Love, Jay Mack, jr.	Arkansas City.
Loveall, George, ...	Beloit.
Mackenzie, Pearl Bartlett, ...	Kansas City.
Maddox, Wilbur F., ...	Oberlin.
Mains, Thomas Irl, ...	Oskaloosa.
Marks, Adele Elsie, ...	Lawrence.
Marsh, Mabel, ...	Kinsley.
Martin, Roy H., ...	<i>Kansas City, Mo.</i>
Mickey, Mary, ...	Osage City.
Miller, Edwin Henry, ...	Lawrence.

Miller, Grace L., ...	El Dorado.
Miller, John Elmer, ...	Clyde.
Mitchell, Caroline, ...	Lawrence.
Mitchum, Lillie, ...	Atchison.
Monahan, Dora, ...	Armourdale.
Morton, Thomas Q., ...	Atchison.
Moodie, Hubert, ...	Lawrence.
Moodie, Leslie, ...	Lawrence.
Morton, Winifred, ...	Atchison.
Moses, Earl, ...	Great Bend.
Mossbacher, George, ...	<i>Kansas City, Mo.</i>
Muckle, Grace, ...	Topeka.
Murdock, May, ...	Clifton.
McConnell, Mattie M., ...	Turner.
McDaniel, Eugenie, ...	LaCrosse.
McDonald, Lotta, ...	Norton.
McKnight, Grace Catherine, ...	Hiawatha.
McLean, Helen, ...	Topeka.
McNutt, Roy Chester, ...	Eureka.
McShane, Jesse J., ...	Gardner.
Newby, Frances, ...	<i>Kansas City, Mo.</i>
Newby, Jonathan, ...	<i>Kansas City, Mo.</i>
Newlon, Olga, ...	Winfield.
Orr, George G., ...	Atchison.
Osmond, Margaret, ...	Great Bend.
Pasho, William, ...	Kansas City.
Paulen, Blanche, ...	Fredonia.
Pearson, Clarence, ...	Enterprise.
Pendleton, Claudia, ...	Lawrence.
Perry, Richard M., ...	Lawrence.
Petit, Julian Caesar, ...	Walnut.
Petit, William D., ...	Walnut.
Pfeifer, Herman, ...	Minneapolis.
Philbrook, Margaret E., ...	<i>Kansas City, Mo.</i>
Phillips, Birdie Ella, ...	Linwood.
Pickell, May, ...	Humboldt.
Pitcher, Arthur Dunn, ...	Havensville.
Polson, Leonard, ...	Cedarvale.
Powell, Milton Hamilton, ...	Hutchinson.
Pratt, Wallace, ...	Phillipsburg.
Quinn, John Alfred, ...	Garden City.
Radley, Grace G., ...	Girard.
Ramsey, Chester Arthur, ...	Redfield.
Rankin, Alice Mary, ...	Lawrence.
Rhodes, Harry Herbert, ...	Wellington.

Rice, William E., ...	Topeka.
Richeson, Hazel May, ...	Lawrence.
Rocklund, Emily, ...	Lawrence.
Ross, Charles Evert, ...	Howard.
Ross, Richard A., ...	St. Marys.
Sailing, Pearl Frances, ...	Winfield.
Sawyer, Minnie, ...	Newton.
Sayre, Lucius E., jr., ...	Lawrence.
Schaeffer, Helen Barbara, ...	Lawrence.
Scherer, Linnus Wayne, ...	Newton.
Sellards, Kate, ...	Lawrence.
Shanklin, Flora Marie, ...	Lawrence.
Shore, Butler, ...	Hutchinson.
Simpson, Henry, ...	Kansas City.
Small, Edwin Weed, ...	<i>Kansas City, Mo.</i>
Smith, Anna C., ...	Lawrence.
Smith, Lona L., ...	Greenleaf.
Spencer, Lydia Ambrosia, ...	Columbus.
Spilman, Minnie, ...	McPherson.
Steele, Hattie, ...	Belvoir.
Sterling, Eugenie, ...	Lawrence.
Stevenson, Harry G., ...	Waterville.
Stevenson, Nellie May, ...	Lawrence.
Stickel, Zula I., ...	Hiawatha.
Strawn, William, ...	Columbus.
Stuart, Geraldine, ...	Lawrence.
Swan, Clifford Howard, ...	Pittsburg.
Theis, Otto Palmer, ...	Ashland.
Tillotson, Luther Rudolph, ...	Topeka.
Tosh, Ralph P., ...	Kansas City.
Tritt, Alfred Garfield, ...	Wellington.
Turrill, Frank, ...	Columbus.
Tyler, Frank Edwards, ...	Clifton.
Uhrich, June, ...	Atchison.
Vandegrift, Grace, ...	<i>Kansas City, Mo.</i>
Wagstaff, Elizabeth, ...	Lawrence.
Walters, Gertrude Merien, ...	Horton.
Ward, Merle, ...	Wellington.
Warren, Luella, ...	Hutchinson.
Webb, Horton Emmett, ...	Howard.
Wellington, Waldo Foster, ...	Ellsworth.
Wierenga, Charles, ...	Cawker City.
Williams, Ada Lucile, ...	Newton.
Williams, Kersey G., ...	Kansas City.
Williams, Lillie Helena, ...	Lawrence.

Wilson, Eleanor J., ...	Lawrence.
Wilson, Florence Blair, ...	Kansas City.
Wolcott, Grace, ...	Lawrence.
Wood, Georgia, ...	Pittsburg.
Woodbury, Emma Blanche, ...	Lawrence.
Young, Raleigh, ...	Colony.
Zimmerman, Edith, ...	Coffeyville.
Zook, George Frederick, ...	Fort Scott.
Zurcher, Rose Frances, ...	Newton.

Freshmen, 225.

SPECIALS.

Ainsworth, Ida, ...	Lyons.
Anderson, Clay, ...	Paola.
Asher, Elsie Frances, ...	Fort Scott.
Ashley, Kate Wood, ...	Lawrence.
Badsky, Bertha Frances, ...	Overbrook.
Bates, Besse M., ...	Topeka.
Beardsley, Adah F., ...	Lawrence.
Blatherwick, Edward, ...	Argentine.
Bond, Rosa, ...	Lawrence.
Borland, Lois, ...	Scranton.
Bowersock, Jean O., ...	Lawrence.
Briley, Otto J., ...	Chanute.
Bristol, Louise L., ...	Anthony.
Buhoup, Olive, ...	Lawrence.
Clark, Esther Mary, ...	Chanute.
Coleman, R. V., ...	Oneida.
Coffman, John Garfield, ...	Lawrence.
Gothlin, Carolyn S., ...	Lawrence.
Cothlin, Emma, ...	Lawrence.
Cureton, Luther W., ...	Lawrence.
Cureton, Thomas, ...	Lawrence.
Davis, George L., ...	Hillsdale.
Deering, John Alexander, jr., ...	Caldwell.
Doolittle, J. E. Dudley, ...	Cottonwood Falls.
Doubleday, Darline, ...	Lawrence.
Driscoll, Jeremiah E., ...	Wilson.
Duke, Ernest M., ...	Lawrence.
Earhart, Birdsey Allen, ...	Oxford.
Ellis, Ralph Waldo, ...	Pratt.
Emmett, Eveline, ...	Lawrence.
Farquharson, Orville, ...	Guthrie, Okla.
Finch, Orville H., ...	Neal.
Gano, Portia, ...	Great Bend.
Gardner, Lulu, ...	Ness City.

Gladfelter, William B.,		Kansas City.
Griggs, Sidney,		Lawrence.
Hayne, Henry Woodward,		Lawrence.
Herrick, Walter G.,		Wellington.
Hinman, Roy,		Lawrence.
Hoefer, Oscar H.,		Higginsville, Mo.
Hoel, Jesse A.,		Burden.
Holliday, Robert,		Lawrence.
Keve, Oliver M.,		Tonganoxie.
Keyes, Walter A.,		Emporia.
Kinne, Clare B.,		Moran.
Kirk, Clarence,		Belleville.
Koch, Edwin O.,		Kansas City.
Landrum, Claude Gresham,		Frankfort.
Lanter, Anna B.,		Olathe,
Luther, Winnifred,		Lawrence.
Mosteller, Bertram B.,		Pittsburg.
Noel, William T.,		Peck.
Patch, Lucille,		Lawrence.
Pendleton, Olive,		Lawrence.
Petry, Everett,		Independence.
Pickens, Minnie L.,		Lawrence.
Porter, Olive,		Lawrence.
Pyle, Capitola,		Haviland.
Pyle, Myrtle,		Haviland.
Reser, Julian E.,		LaCrosse.
Robinson, Abbott G.,		Lawrence.
Rogers, Clark,		Ransom.
Roller, Lee Wilbert,		Lecompton.
Rutherford, Fae,		Lawrence.
Schmalzried, Mary D.,		McPherson.
Sherman, Lulu Gertrude,		Lawrence.
Simpson, Elizabeth,		Kansas City.
Sinclair, Alice,		Lawrence.
Stewart, Jennie Isabelle,		Howard.
Stichter, Charles,		Pleasant Hill, Ohio.
Sweezey, Edith,		Olivet.
Taylor, Raymond G.,		Fort Scott.
Tillotson, Charles C.,		Olathe.
Varney, Herbert Hadden,		Kansas City.
Ward, Nelson J.,		Belleville.
Wierenga, Henry G.,		Cawker City.
Worley, Jesse M.,		Emporia.

The School of Engineering.

SENIORS.

Baldry, Will Ernest, C. E.,	Hiawatha.
Bedell, Harry Samuel, Min. E.,	Iola.
Black, Dudley Frank, E. E.,	Kansas City, Mo.
Brown, Claude D., Min. E.,	Lawrence.
Carter, Alfred B., C. E.,	Lawrence.
Clark, Ora Allen, E. E.,	Wallace.
Diesem, Lee Cook, E. E.,	Garden City.
Feitshans, Rollin, Min. E.,	Kansas City, Mo.
Flint, Louis Joseph, E. E.,	Minneapolis.
Hoefler, Benjamin Charles, C. E.,	Higginsville, Mo.
Lewis, Otto, M. E.,	Blue Rapids.
Marcellus, Jonta B., C. E.,	Paola.
Metcalf, Eliab Wight, C. E.,	Lawrence.
Nelson, Earle, C. E.,	Leavenworth.
Seamans, Worth James, E. E.,	Lawrence.
Shaler, Millard King, Min. E.,	Lawrence.
Sills, John Muir, C. E.,	Kansas City, Mo.
Smith, Chester Alexander, C. E.,	Florence.
Stainer, Monroe Andrew, Min. E.,	Harper.
Tucker, Austin, E. E.,	Wichita.
Williams, Harry, E. E.,	Burrton.
Worley, John Stephen, C. E.,	Odessa, Mo.

Seniors, 22.

JUNIORS.

Barton, Ray, E. E.,	Lawrence.
Bayless, Otis Alonzo, E. E.,	Lawrence.
Blanpied, Dolph, C. E.,	Leavenworth.
Butler, James W., C. E.,	Ottawa.
Carney, James Howard, C. E.,	Baxter Springs.
Cooke, Chester, C. E.,	Herington.
Hansen, George Troup, Min. E.,	Logan.
Haworth, Asa, M. E.,	Lawrence.
Hoffman, Albert A., Min. E.,	Parsons.
Hull, Blake, E. E.,	Delphos.
Johnson, George DeForest, Min. E.,	Burr Oak.
Leighty, William Jacob, E. E.,	Tonganoxie.
Madigan, Frank, C. E.,	Wallace.
Maxwell, Giles, E. E.,	Morrill.

C. E. = Civil Engineer.

E. E. = Electrical Engineer.

M. E. = Mechanical Engineer.

Min. E. = Mining Engineer.

Ch. E. = Chemical Engineer.

Mieth, Richard, C. E., ...	Lawrence.
Morrison, Ralph Waldo, C. E., ...	Lawrence.
Morrow, Charles E., E. E., ...	Topeka.
O'Neil, Joseph, C. E., ...	Leavenworth.
Pigg, Howard Fee, E. E., ...	Wichita.
Porter, Roland, C. E., ...	Idana.
Quiring, William A., E. E., ...	Newton.
Russell, Frank, C. E., ...	Peabody.
Schoenau, Eric, E. E., ...	Tonganoxie.
Sherwood, Noble P., C. E., ...	Kansas City.
Sim, Arthur B., E. E., ...	Wichita.
Tommasini, Antonio, C. E., ...	<i>Kansas City, Mo.</i>
Wilson, Hill P., jr., Min. E., ...	Lawrence.
Williams, Bruce, Min. E., ...	Chanute.
Zimmerman, Oscar A., C. E., ...	Olathe.

Juniors, 29.

SOPHOMORES.

Adams, Irwin D., E. E., ...	Caldwell.
Benson, Nels C., E. E., ...	Lawrence.
Brett, Lawrence, Min. E., ...	Lawrence.
Brown, Andrew R., C. E., ...	Scammon.
Brown, Waitman W., E. E., ...	Reserve.
Carruth, Frank D., M. E., ...	Topeka.
Chase, Frank, E. E., ...	Lyons.
Dunmire, Herbert, C. E., ...	Lawrence.
Eyerly, Tema L., C. E., ...	Nortonville.
Hoxie, Herbert G., M. E., ...	Lawrence.
Love, Ralph H., E. E., ...	Hiawatha.
Mann, Arthur R., C. E., ...	St. John.
McLaughlin, Alden, E. E., ...	<i>Denver, Colo.</i>
Neff, Paul J., Min. E., ...	<i>Kansas City, Mo.</i>
Neville, William, C. E., ...	Lawrence.
Parker, Glenn L., C. E., ...	Olathe.
Plake, Frank, Min. E., ...	Chanute.
Rea, Fred I., E. E., ...	Hiawatha.
Reno, Edward Newton, E. E., ...	Lawrence.
Rieman, Jonathan B., C. E., ...	Hutchinson.
Seaver, Charles Homer, E. E., ...	Ellsworth.
Skofstad, Oscar James, C. E., ...	Lawrence.
Smith, Owen, E. E., ...	Independence.
Strickler, Thomas Johnson, C. E., ...	Topeka.
Stuart, Walter Tuller, E. E., ...	Baldwin.

Sophomores, 25.

FRESHMEN.

Adams, D. Stanley, C. E.,	Kansas City, Mo.
Amerman, Melvin R., C. E.,	Iola.
Anderson, Dan S., C. E.,	Lawrence.
Bailey, Edgar Lawrence, Ch. E.,	Lawrence.
Baird, Gerald, Min. E.,	Chanute.
Bangs, Frank, Min. E.,	Lawrence.
Barnes, Luther, C. E.,	Lawrence.
Bedell, Frank G., Min. E.,	Iola.
Benson, Fred Bernhard, E. E.,	Lawrence.
Biggs, Lawrence Julian, C. E.,	Lawrence.
Black, Ernest Bateman, C. E.,	Mead.
Bohn, Louis J., E. E.,	Troy.
Boright, Beth, Ch. E.	Kansas City, Mo.
Bramwell, Glenn H., C. E.,	Belleville.
Broadbent, Charles, C. E.,	Corning.
Brock, Frank Peterson, E. E.,	Girard.
Busch, Harry, C. E.,	Kansas City, Mo.
Byrnes, Harry, C. E.,	Belle Plaine.
Cady, George W., C. E.,	Lawrence.
Calkin, Bert H., C. E.,	Herington.
Campbell, Earl, M. E.,	Kansas City.
Cater, Don, Min. E.,	Lawrence.
Coleman, Bond, E. E.,	Lawrence.
Collins, Lee, E. E.,	Topeka.
Cook, Archer T., C. E.,	Onaga.
Coston, Alfred Taylor, C. E.,	Fort Scott.
Courtney, Delos, C. E.,	Lawrence.
Crotinger, William, E. E.,	Bisen.
Curl, Vernon B., C. E.,	Phillipsburg.
Davidson, J. Harry, Ch. E.,	Burlington.
Davis, Brett, C. E.,	Independence.
DeGeer, Wm.,	Coffeyville.
Donald, Prentiss Charles,	Moran.
Eckman, Arthur Ralph, E. E.,	Argentine.
Felt, Frank, C. E.,	Minneapolis.
Filkin, Roy Samuel, C. E.,	Rosedale.
Forney, George, C. E.,	La Crosse.
Forter, Samuel, C. E.,	Marysville.
Freiburghouse, Edward, E. E.,	Hiawatha.
Fry, Vene, E. E.,	Iola.
Gephart, Elmer B., M. E.,	Valley Falls.
Gibson, Edward, E. E.,	Kansas City.
Gordon, Bert Eston, C. E.,	Fort Scott.

Gowans, Harry, M. E.,	Lawrence.
Grant, F. Richard, M. E.,	Ellinwood.
Green, Fred W., C. E.,	Manhattan.
Hackney, William, E. E.,	Wellington.
Hale, Elson, C. E.,	La Crosse.
Hanna, Harry L., E. E.,	Lawrence.
Hatashita, Cheoichiri, E. E.,	<i>Tahara, Japan.</i>
Heine, John Farnsworth, C. E.,	Fort Scott.
Hicks, Will F., C. E.,	Beloit.
Hine, Charles Robinson, Min. E.,	Kinsley.
Hixson, Arthur Warren, Min. E.,	Hiawatha.
Holben, Marvin, E. E.,	Norcatun.
Holtzschue, Robert, C. E.,	Sabetha.
Hopkins, G. Jay, M. E.,	Garnett.
Hoskins, Harry D., C. E.,	<i>Las Vegas, N. M.</i>
Humes, Elwood, C. E.,	Emporia.
Kaler, John E., E. E.,	Linn.
Katsuno, Sadahara, E. E.,	<i>Tokio, Japan.</i>
Keller, Elmer, E. E.,	Independence.
Kepner, Wilford, E. E.,	Sabetha.
Klaumann, Charles, Min. E.,	Iola.
Kuchs, Oscar, Min. E.,	Doniphan.
Lambeth, George, C. E.,	Moran.
Lank, William John, C. E.,	La Crosse.
Lanning, Howard H., E. E.,	Findlay.
Linton, Edwin Thomas, C. E.,	Lawrence.
Longenecker, Albert M., Min. E.,	Paola.
Lydick, Olaf B., E. E.,	Anthony.
Mackenzie, George Pierce, E. E.,	Kansas City.
Martin, John B., Ch. E.,	Mound City.
Miller, Henry H., C. E.,	Fort Scott.
Morgan, Carl, E. E.,	DeSoto.
Murray, Roy, E. E.,	Olathe.
McCauley, James, C. E.,	Topeka.
McConaughy, David Charles, C. E.,	Atchison.
McNaspy, Clement James, C. E.,	Herington.
Oldroyd, Ralph, C. E.,	Arkansas City.
Parker, Howard, E. E.,	Lawrence.
Pirschell, William, Min. E.,	Holliday.
Powell, Grover Cleveland, C. E.,	<i>Anaconda, Wyo.</i>
Power, Roy B., E. E.,	Baldwin.
Purton, Astley, E. E.,	Minneapolis.
Pyle, Eben Walter, C. E.,	Haviland.
Ramsay, Terrence Eugene, E. E.,	Tonganoxie.
Randall, David M., C. E.,	Newton.

Read, Howard, C. E.,	Parsons.
Relihan, Harry, C. E.,	Smith Center.
Renner, Edgar Ivan, E. E.,	Mound Valley.
Russell, Lloyd, C. E.,	Lawrence.
Schaak, Frank, C. E.,	Kansas City.
Scheller, Carl, E. E.,	Kansas City.
Scott, Donald M., C. E.,	Belleville.
Shuey, Paul F., E. E.,	Emporia.
Sigler, Elmer, C. E.,	Kansas City.
Sleeth, Earle, E. E.,	Lyndon.
Smith, Eugene G., M. E.,	Lawrence.
Smith, Harris B., E. E.,	Lawrence.
Smith, Henry Hume, C. E.,	Stockton.
Smith, I. U., C. E.,	<i>Kansas City, Mo.</i>
Spangler, Adolph James, C. E.,	Lawrence.
vonStein, Louis Raymond, E. E.,	Lawrence.
Stewart, Ira W., C. E.,	Stockton.
Strode, Robert L., E. E.,	Fort Scott.
Sweezay, Roy, E. E.,	Olivet.
Taylor, Ralph J., E. E.,	Lawrence.
Taylor, Ray, Ch. E.,	Iola.
Thomas, Jay David, Min. E.,	Argentine.
Ward, Verl, E. E.,	Lawrence.
Ward, Walter, C. E.,	Belleville.
Waring, Clarence, C. E.,	Marion.
Waring, Horace, E. E.,	Marion.
White, Edward A., C. E.,	Independence.
White, Leonard, C. E.,	Delphos.
Whitney, Charles, C. E.,	Girard.
Wilkinson, Alvin S., M. E.,	Seneca.
Wilson, Ada, C. E.,	Olathe.
Winning, Robert K., E. E.,	<i>Kansas City, Mo.</i>

Freshmen, 120.

SPECIALS.

Adams, Ira James, E. E.,	Perry.
Albaugh, Clarence J., Min. E.,	Kingman.
Bruton, John P., C. E.,	Valley Falls.
Burns, Clarence Arthur, M. E.,	Carbondale.
Campbell, Newton, Ch. E.,	Lawrence.
Chapin, Karl,	Kansas City.
Chronister, Hubert D.,	Abilene.
Crawford, Wilbur L.,	<i>Drexel, Mo.</i>
Epps, Frederick William, C. E.,	Topeka.
Gilmore, William Lansing, E. E.,	Lawrence.
Heuser, Charles Ulrich, C. E.,	Fort Scott.

Johnson, William Jacob, C. E., . . .	Cleburne.
Logan, Spencer R., E. E., . . .	Cherryvale.
Loomis, Wesley Horace, Min. E., . . .	Chillicothe, Mo.
Lovell, Charles W., Min. E., . . .	Argentine.
Morrison, John C., E. E., . . .	Great Bend.
McDougall, George, C. E., . . .	Kansas City.
Nelson, Bernhard Richard, E. E., . . .	Lawrence.
Nottingham, Avon R., M. E., . . .	Lawrence.
Reid, Claude, E. E., . . .	Morrill.
Romig, Benjamin, C. E., . . .	Ottawa.
Wampler, Oliver, . . .	Webb City, Mo.
Wheeler, Wilfred Forest, Min. E., . . .	Argentine.
Young, Alexander R., C. E., . . .	Chanute.

Specials, 24.

UNCLASSIFIED.

Ahlborn, George, . . .	Smith Center.
Baird, Alfred H., . . .	Minneapolis.
Bliss, Tulla, . . .	Oskaloosa.
Boardman, Floyd, . . .	Arkansas City.
Childs, True W., . . .	Baxter Springs.
Christie, William Ernest, . . .	Cedarvale.
Clark, Lee Ernest, . . .	Winchester.
Clarke, Louis Herbert, . . .	Chanute.
Clossen, Roy Hugh, . . .	Coffeyville.
Coleman, Orla Loomis, . . .	Oneida.
Cooper, William Bain, . . .	Kansas City.
Coventry, Neil Sherman, . . .	Fort Scott.
Crabtree, George Wellington, . . .	Winfield.
Davies, Edwin P., . . .	Fall River.
Dove, Frank, . . .	Chanute.
Dudley, Chandler, . . .	Independence.
Dunlap, James R., . . .	Bonner Springs.
Elder, Emil, . . .	Haviland.
Ellis, Gwynne Wallace, . . .	Pratt.
Flory, Tom W., . . .	Howard.
Forney, Harvey Perkins, . . .	LaCrosse.
Gelwix, Edmund, . . .	Thayer.
Greenfield, Benjamin, . . .	Price.
Harris, John Wilson, . . .	Manhattan.
Hart, Harry A., . . .	Beloit.
Henderson, William Simpson, . . .	Leavenworth.
Hillabrant, John W., . . .	Washington.
Huddleston, Early, . . .	Lawrence.
Kelley, Cecil, . . .	Iola.
Knowlton, William, . . .	Iola.

Kuhn, Julius, ...	Atchison.
Lainhart, Otho, ...	Mound City.
Lee, Benedict, ...	Hutchinson.
Morgan, James Arthur, ...	Coffeyville.
Morse, Orlin Raymond, ...	Mound City.
Myers, George Washington, ...	Newton.
Neale, Justice M. B., ...	Herington.
Nicol, David, ...	Carbondale.
Noel, Elmer, ...	Pittsburg.
Padfield, Elmer, ...	Hutchinson.
Palmer, Everett A., ...	El Dorado.
Palmer, Sidney L., ...	Burdett.
Pearce, Edwin, ...	Junction City.
Perkins, David, ...	Lawrence.
Rogers, Wilbur, ...	Ransom.
Rooney, Chester C., ...	Fairview.
Rose, Harry J., ...	Atchison.
Shaw, Joseph, ...	Wa Keeney.
Shuey, Ralph, ...	Emporia.
Simon, Edmond, ...	<i>Kansas City, Mo.</i>
Smart, Arthur, ...	Kinsley.
Starkie, John L., ...	<i>Kansas City, Mo.</i>
Stevens, Otto N., ...	Hutchinson.
Thorpe, Joel Rex, ...	Merriam.
Tobey, Harry, ...	Salina.
Tredick, George Chester, ...	Kingman.
Tripp, Roy Gifford, ...	Herington.
Wangerien, Carl, ...	Vining.
Warren, Harry, ...	Pratt.
Watkins, Elmer, ...	Anthony.
Wellington, Earl J., ...	Salina.
Wilson, Roy E., ...	Hutchinson.
Wixson, Manley Joseph, ...	Vining.
Young, Horace Leopold, ...	Girard.

Unclassified, 64.

The School of Law.

SENIORS.

Adams, Edgar Ray,	Kansas City.
Anderson, Wallace H.,	Hiawatha.
Benson, Harleigh,	Lawrence.
Botts, Jay T.,	Coldwater.
Brumage, Alpha,	Beloit.
Culp, Lynn W.,	Centerville.
Cureton, Luther W.,	Red Point, Mo.
DeLano, Raymond James,	Fulton.
Dodds, Frank B.,	Lawrence.
Evans, Richard W.,	Dodge City.
Filken, Walter Warren,	Rosedale.
Gernon, Michael J.,	Russell.
Gold, Frank McCray,	Baker.
Hamilton, Clay,	Howard.
Hanlon, Thomas James,	Coffeyville.
Henderson, David Eustace,	Emporia.
Higley, Clyde S.,	Kansas City, Mo.
Huston, W. Clarence,	Pittsburg.
Hume, C. Ross,	Anadarko, Okla.
Jones, Charles Vincent	Stillwater, Okla.
Keene, Harry,	Belleville.
Killey, William Alfred,	Nortonville.
Kirkpatrick, John L.,	Lawrence.
Kube, Herman,	Kansas City, Mo.
Linscott, Sydney Smith,	Holton.
Losey, T. Belmont,	Columbus.
March, Harry Blair,	Baxter Springs.
Martin, Freeman L.,	Lowell.
Mills, Clarence Mansfield,	Irving.
Moses, Edward R., jr.,	Great Bend.
Neeley, George Arthur,	Wellston, Okla.
Peters, James Arthur,	Kansas City, Mo.
Rigdon, Charles L.,	Plainville.
Seaver, William Rufus,	Ellsworth.
Sims, Algie Freeman,	Severy.
Stuessi, George H.,	Kansas City.
Sutton, Walter William,	Langton.
Wells, Edgar,	Topeka.
Wettack, Frank,	Coffeyville.

MIDDLES.

Ackarman, Carl, ...	Sedan.
Akin, Del Mar, ...	Manhattan.
Allen, Harry B., ...	Independence.
Asher, Henry, ...	Lawrence.
Barnes, George G., ...	Lawrence.
Blue, Burdette, ...	Coffeyville.
Brady, James A., ...	Chetopa.
Brown, Albert, ...	Galena.
Carter, George S., ...	Marysville.
Clafin, Oliver Q., ...	Kansas City.
Cleland, Sadie, ...	Lawrence.
Cureton, Thomas H., ...	<i>Red Point, Mo.</i>
Dyer, William, ...	Baldwin.
Fairchild, Abijah, ...	Burrton.
Field, Arthur, ...	Solomon.
Fulton, Charley, ...	Hutchinson.
Garrard, Malcolm, ...	Topeka.
Gillette, Fred Asa, ...	<i>Anadarko, Okla.</i>
Givins, Roy James, ...	Salina.
Hicks, Albert, ...	Beloit.
Hughes, Judson, ...	Garnett.
Humfreville, Henry K., ...	Waterville.
Jennings, Charles W., ...	Kansas City.
Johnson, John, ...	Marysville.
Michaelson, Manley E., ...	Moline.
Miller, Harvey, ...	Fort Scott.
Morgan, David, ...	Garden City.
McCoy, Frank Alexander, ...	Sawyer.
Patrick, Robert Burns, ...	Topeka.
Pees, Guy E., ...	Iola.
Petry, Everett, ...	Independence.
Pooler, Arthur, ...	Beloit.
Powell, George K., ...	Minneapolis.
Rice, Richard E., ...	Lawrence.
Sanders, Harvey, ...	Burlington.
Thompson, Richard H., ...	Horton.
Urbansky, Grover C., ...	St. Marys.
VanNatta, Henry, ...	Belleville.
Woodford, James W., ...	Burlington.

JUNIORS.

Alford, Donald,	Lawrence.
Benson, George J.,	El Dorado.
Briley, Otto J.,	Chanute.
Broadie, Wilber Esting,	Winfield.
Brown, Chauncey G.,	Wichita.
Byers, Reed,	Independence.
Clevenger, Raymond,	Lawrence.
Coleman, Hardy D.,	Washington.
Cook, Perry C.,	Gove City.
Coulson, William Franklin,	Harper.
Crawford, James E.,	Eskridge.
Culp, Cornelius, jr.,	Troy.
DePoe, Robert R.,	Lawrence.
Disney, Ernest,	Independence.
Douglas, William,	Cherryvale.
Driscoll, Jeremiah E.,	Wilson.
Elder, William Henry,	Salina.
Finkle, Ellsworth Weaver,	Galva.
Fleishman, John	Topeka.
Ford, S. Clarence,	Garden City.
Gilleece, Claude M.,	Denison.
Haist, Charles,	Holton.
Hamlin, Will	Lawrence.
Harrington, Samuel R.	Williamsburg.
Harvey, Marshal,	Minneapolis.
Heard, Walter L.	Arkansas City.
Henley, Warren,	Lawrence.
Jones, Walter Fred,	Hutchinson.
Mahin, Will,	Smith Center.
Mitchell, Frank Jonestone,	St. Joseph, Mo.
Kimball, Paul H.,	Parsons.
Lanham, Elva Barton,	Lawrence.
Little, Jerome,	Holton.
Lusk, Don W.	Parsons.
Mosher, William,	Parsons.
McCartney, Herbert M.,	Neodesha.
McCarty, Wirt G.,	Emporia.
McGinnis, Charles Edgar,	Elk City.
Naill, J. A.,	Herington.
Noel, William.	Peck.
Nonken, Mark Alva.,	Peabody.
O'Sullivan, Timothy John,	Galena.
Parker, Wilbur,	Emporia.

Perry, Frederick Francis, ...	Kiowa.
Popham, Emerson, ...	Minneapolis.
Rader, Frank, ...	Olathe.
Ray, Anthony, ...	Chanute.
Relihan, Arthur, ...	Smith Center.
Roberts, Clarence, ...	Lawrence.
Robinson, Abbott Granville, ...	Lawrence.
Ryan, Fred, ...	Wellsville.
Ryan, Harvey, ...	Parsons.
Sedgwick, Fred, ...	Parsons.
Stichter, Charles, ...	<i>Pleasant Hill, Ohio.</i>
Swan, Theodore Asa, ...	Pittsburg.
Varney, Herbert Hadden, ...	Kansas City.
Vaughn, Charles M., jr., ...	Marion.
Ward, Nelson J., ...	Belleville.
Wilson, Wallis D., ...	Horton.

Juniors, 59.

SPECIALS.

Battin, George E., ...	Greensburg.
Butts, Rutherford Beecher Hayes, ...	Mound Valley.
Castello, John, ...	<i>Rich Hill, Mo.</i>
Chappell, Walter H, ...	Chanute.
Fehr, Carl Frederick, ...	Arlington.
Kirk, Clarence, ...	Belleville.
Royer, Jacob C., ...	Gove City.
Wood, John B., ...	Concordia.

Specials, 8.

The School of Fine Arts.

GRADUATES.

Cooke, Maude Beatrice,		Lawrence.
Greissinger, Harriet,	. :	Lawrence.
Miller, Maude,		Lawrence.
Nungesser, Ella,		Parker.
Worley, Mayme B.,		Lawrence.
Wiedemann, Louise,		Lawrence.

Graduates, 6

SENIORS.

Jehlik, Joseph Frank,		Belleville.
Leonard, Alice E.,		Lawrence.
McElhiney, John Irwin Gregg,		Kansas City.
Parks, Mary Keeling,		Ottawa.
Rush, Maud,		Lawrence.
Scriven, Julia Etha,		Lucas.

Seniors, 6.

JUNIORS.

Hammond, Margaret DeVeaux,		Hiawatha.
Knight, Edith B.,		<i>Kansas City, Mo.</i>
Moses, Grace Lorene,		Great Bend.
Watson, Elsie,		Lawrence.

Juniors, 4.

SOPHOMORES.

Cady, Lenna May,		Lawrence.
Clark, Carlotta,		Sharon Springs.
Clark, Elizabeth Lois,		<i>Nettleton, Mo.</i>
Cullers, Gertrude Estella,		Scandia.
Filkin, Edna Bell,		Rosedale.
Folks, Emma V.,		Lawrence.
Maser, Pearl Bechtel,		Parsons.
McKoin, Mabel,		Olathe.
Perkins, Margaret Louise,		Lawrence.
Roudebusch, Olive May,		Great Bend.
Sweeney, Anna Louise,		Lawrence.
Taylor, Alice Maude,		Belleville.
Waters, Miriam Rose,		Bonner Springs.

Sophomores, 13.

FRESHMEN.

Bauman, Helen, ...	Neodesha.
Bayless, Florence Banker, ...	Lawrence.
Bonar, Katherine, ...	Lawrence.
Chisham, Ruby, ...	Atchison.
Deibel, Frona, ...	Independence.
Duncan, Alice, ...	<i>Kansas City, Mo.</i>
Frederickson, Rose A., ...	Lawrence.
Gray, Susie, ...	Pleasanton.
Kackley, Vivien Margaret, ...	Parsons.
Kinsey, Katherine, ...	Delphos.
Mossler, Sadie, ...	Lawrence.
McLaughlin, Leona, ...	Branson.
McNaughton, Lucile, ...	Tonganoxie.
Rose, Myrtle, ...	Ionia.
Russ, Gertrude, ...	Lawrence.
Russell, Edith M., ...	Westmoreland.
Rutherford, Fae, ...	Lawrence.
Sample, Walter Herman, ...	Peoria.
Southwick, Louise, ...	Parsons.
Whitman, Meriel, ...	Lawrence.

Freshmen, 20.

SPECIALS.

Badsky, Bertha F., ...	Overbrook.
Bayless, Florence B., ...	Lawrence.
Blackmar, Winifred, ...	Lawrence.
Bowersock, Jean O., ...	Lawrence.
Braymer, A. Lulu, ...	<i>Braymer, Mo.</i>
Brockway, Frances, ...	Lawrence.
Carruth, Constance, ...	Lawrence.
Collier, Capitola, ...	Liberal.
Cone, Margaret, ...	Lawrence.
Dalton, Mrs. B. J., ...	Lawrence.
Dean, Ethel M., ...	Marion.
Dixon, Grace, ...	Haskell.
Duffy, Mae, ...	Waverly.
Eames, Lola, ...	Lawrence.
Fitch, Louise, ...	Lawrence.
Garrett, Clyda Anna, ...	Holliday.
Gatlin, Dana Elizabeth, ...	Paola.
Gibson, Helen Louise, ...	Lawrence.
Henderson, Mrs. H., ...	<i>Kansas City, Mo.</i>
Hill, Jessie Duncan, ...	Hiawatha.

Hoad, Mrs. W. C.,	.	.	.	.	.	Lawrence.
Hodgson, Charlotte M.,	.	.	.	.	.	Lawrence.
Ingleman, Maude,	.	.	.	.	.	Lawrence.
Lindsay, Celia,	.	.	.	.	.	Lawrence.
Lindsay, Corinthia,	.	.	.	.	.	Lawrence.
Lindsay, Merrill,	.	.	.	.	.	Topeka.
Mayes, Pearl,	.	.	.	.	.	Lawrence.
Miller, Mattie,	.	.	.	.	.	Lawrence.
Moody, Rebecca,	.	.	.	.	.	Lawrence.
Morton, Katherine Kent,	.	.	.	.	.	Tescott.
Morton, Jessie,	.	.	.	.	.	Tescott.
Owens, Minnie Luetta,	.	.	.	.	.	Lawrence.
Parrish, Josephine,	.	.	.	.	.	Lawrence.
Reardon, Agnes,	.	.	.	.	.	Lawrence.
Scherer, Linnius,	.	.	.	.	.	Newton.
Scott, Vivian,	.	.	.	.	.	Wellington.
Stewart, Lotta,	.	.	.	.	.	<i>Webb City, Mo.</i>
Washburn, Luella,	.	.	.	.	.	Ottawa.
Wilhelm, Alice,	.	.	.	.	.	Lawrence.
Young, Dora Robb,	.	.	.	.	.	Ellsworth.
Zurcher, Rose Frances,	.	.	.	.	.	Newton.

Specials, 39.

The School of Pharmacy.

SENIORS.

Arbuthnot, Charles J.,	Belleville.
Billingsley, William Hall,	Belleville.
Braden, Charley R.,	Elsmore.
Brandon, Earl,	Clyde.
Caldwell, Edna,	Lawrence.
Collins, Luman F.,	Belleville.
Deaver, Glenn H.,	Robinson.
Glanville, Oscar,	Lone Star.
Goodrich, Harris C.,	Topeka.
Hines, Willard,	Kansas City.
Ireland, Frederick Robert,	Bronson.
Jenkinson, Julian,	Gaylord.
Johnson, Herbert A.,	Cleburne.
Keef, Walter Ernest,	Kensington.
Kuhl, Jay D.,	Cottonwood Falls.
Long, Maude,	Clay Center.
Mallett, Charles E.,	Erie.
Moore, Fred W.,	Ottawa.
Mosher, Ida,	Kinsley.
Nelson, John,	Wichita.
Salathiel, Walter,	Independence.
Scanlon, Albert B.,	Toronto.
Williams, Leroy,	Garnett.
Wilson, Warren,	Burlington.

Seniors, 24.

JUNIORS.

Adams, Lindsey Kelly,	Chase.
Baldwin, Roy Andrew,	Mound Valley.
Bernet, Erwin Benjamin,	Sabetha.
Burriss, Galen,	Burrton.
Callahan, Joseph,	Leavenworth.
Chatelle, Rodney,	Lawrence.
Colvin, Zulu A.,	Burrow.
Davis, Omie,	Wichita.
Drisko, Judah,	Abilene.
Funchess, Clyde A.,	Topeka.
Gayette, Omar,	Elsmore.
Guffey, Elmer Lee,	Larned.
Ingalls, Maurice S., jr.,	Halstead.
Jay, Roy J.,	Wichita.

Lahr, Harry, ...	Sabetha.
Lake, Francis, ...	Ozawkie.
Miller, Dale, ...	Topeka.
McClintock, Fred, ...	Florence.
Pickering, George B., ...	Olathe.
Riddle, Taylor, jr., ...	Marion.
Riley, Roy, ...	Wichita.
Robinson, Samuel L., ...	Eureka.
Sanford, Roy L., ...	Independence.
Sheddon, Thomas, ...	Formoso.
Sternberg, Harold, ...	Wichita.
Stevens, Percy, ...	Antrim.
Tribble, Wiltz B., ...	Independence.
Vesper, Menno A., ...	Mound Ridge.
DeVries, Henry J., ...	Hepler.
Williams, James B., ...	Topeka.
Wolcott, Arthur, ...	Russell.
Yeilding, Arthur T., ...	Wichita.
Young, Otis, ...	Everest.

Juniors, 33.

SOPHOMORES.

Shaw, Napoleon Richard, ...	Kansas City.
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Sophomores, 1.

FRESHMEN.

Colvin, William P., ...	Lawrence.
Riddell, Hugh, ...	McPherson.

Freshmen, 2.

SPECIALS.

Burns, Charles Arthur, ...	Carbondale.
Eastman, Jay W., ...	Cottonwood Falls.
Haines, Robert F., ...	Niotaze.
Henry, Ira Edmond, ...	Summerfield.
Long, David S., ...	Lawrence.
Martindale, Romo May, ...	Topeka.
Miller, Pearl DeEtte, ...	El Dorado.
*Prentiss, William H., ...	Howard.
Reed, Roy, ...	Ottawa.
Smith, Frank R., ...	Augusta.
West, Claude W., ...	Dodge City.
Wilson, Wallace William, ...	Wichita.

Specials, 12.

The School of Medicine.**SECOND YEAR.**

Cater, Roy, ...	Lawrence.
Chilcott, William L., ...	Mankato.
Harvey, John K., ...	Salina.
Schaeffer, Frank, ...	Oskaloosa.
Swanson, John Theodore, ...	Independence.

Second Year, 5.

FIRST YEAR.

Alford, Joseph Savage, ...	Lawrence.
Bailey, William Hotchkiss, ...	Lawrence.
Bliss, Charles J., ...	Oskaloosa.
Brownlee, Howard J., ...	Lawrence.
Chaney, Everett B., ...	Independence.
Francisco, Clarence Benjamin, ...	Lawrence.
Galloway, Milton, ...	WaKeeney.
Gaskill, Harry B., ...	Sterling.
Gephart, John, ...	Oskaloosa.
Gibson, Charles M., ...	Pittsburg.
Harvey, Clarence, ...	Salina.
Porter, Alice, ...	Lawrence.
Relihan, Frank, ...	Smith Center.
Russell, Marion Fore, ...	Great Bend.
Sorgatz, Frank, ...	Beloit.
Tuthill, Herbert, ...	Salina.
Woodin, John, ...	Lawrence.

*Deceased.

First Year, 17.

The Summer Session.

Adams, James Homer, <i>English</i> , ...	Stillwater, Okla.
Ambrose, Cora B., <i>English</i> , ...	Lecompton.
Andrews, Austin Chandler, <i>Law</i> , ...	Beloit.
Ashley, Mabel, <i>Botany</i> , ...	Lawrence.
Austin, Louise, <i>Education</i> , ...	La Junta, Col.
Bahner, Ralph Waldo, <i>French</i> , ...	Clay Center.
Bailey, Mark, <i>Chemistry</i> , ...	Chanute.
Banker, Julian Warfield, <i>Mathematics</i> , ...	Lawrence.
Barnes, George G., <i>Law</i> , ...	Lawrence.
Barnett, Fred, <i>French</i> , ...	Goodland.
Barr, Russell Ora, <i>Drawing</i> , ...	Waverly.
Becker, Cora E., <i>Education</i> , ...	Lawrence.
Bennett, John, <i>Geology</i> , ...	Kansas City.
Berry, Josephine, <i>Education</i> , ...	Waterville.
Bisset, Charles, <i>Chemistry</i> , ...	Lecompton.
Bliss, Philemon, <i>English</i> , ...	Hiawatha.
Boright, Beth, <i>Mathematics</i> , ...	Kansas City, Mo.
Borland, Lois, <i>French</i> , ...	Scranton.
Bowen, Clara Elizabeth, <i>French</i> , ...	Wichita.
Brook, Charles F., <i>Geology</i> , ...	Blue Mound.
Brown, Lola, <i>Botany</i> , ...	Lawrence.
Brumage, Alpha, <i>Law</i> , ...	Beloit.
Bruton, John P., <i>Chemistry</i> , ...	Valley Falls.
Burnett, Agnes A., <i>Latin</i> , ...	Wakefield.
Burrows, Montrose T., <i>Entomology</i> , ...	Lawrence.
Caughey, Inez, <i>Latin</i> , ...	Horton.
Chaney, Earl Carper, <i>Geology</i> , ...	Independence.
Cleland, Sadie A., <i>Law</i> , ...	Lawrence.
Copley, Mary, <i>Drawing</i> , ...	Lawrence.
Cosgrove, Teresa, <i>English</i> , ...	Olathe.
Cramer, Carl, <i>Geology</i> , ...	Independence.
Culp, Lynn W., <i>Law</i> , ...	Centerville.
Davis, George L., <i>English</i> , ...	Lawrence.
DeLano, Raymond J., <i>Law</i> , ...	Fulton.
Diesem, Lee Cook, <i>Chemistry</i> , ...	Garden City.
Dillard, Mary J., <i>English</i> , ...	Lawrence.
Dodds, Caryl, <i>Botany</i> , ...	Lawrence.
Dodds, Frank B., <i>Law</i> , ...	Lawrence.
Easton, Walter D., <i>German</i> , ...	Atwood, Ill.
Egan, Belle, <i>Chemistry</i> , ...	Waverly.
Ellis, Ralph Waldo, <i>Chemistry</i> , ...	Pratt.
Flint, Louis J., <i>Chemistry</i> , ...	Minneapolis.
Gilchrist, Evelyn, <i>German</i> , ...	Kansas City, Mo.

Goss, Andrew, <i>German</i> , ...	Pleasanton.
Greene, Marie A., <i>Botany</i> , ...	Lawrence.
Gustafson, Carl F., <i>French</i> , ...	Lawrence.
Guthridge, Anna, <i>German</i> , ...	Kingman.
Hackney, Ernest Clarence, <i>Chemistry</i> , ...	Sedgwick.
Haines, Metta K., <i>German</i> , ...	Edwardsville.
Hall, Jesse A., <i>Law</i> , ...	Bonner Springs.
Hansen, Kate, <i>Botany</i> , ...	Logan.
Hanson, Carl Emil, <i>Mathematics</i> , ...	Marquette.
Heren, Montania, <i>Drawing</i> , ...	Stillwater, Okla.
Hopkins, Warren, <i>Shop, Drawing</i> , ...	Horton.
Houdyshel, Cecil, <i>Entomology</i> , ...	Lecompton.
Iles, Victor, <i>Geology</i> , ...	Independence.
Ingleman, Anna A., <i>Latin</i> , ...	Lawrence.
Ingram, Will C., <i>Chemistry</i> , ...	Beloit.
Jacoby, Franklin Clarke, <i>Constitutional Law</i> , ...	Sterling.
Katsuno, Sadaharu, <i>Mathematics</i> , ...	Tokio, Japan.
Kennedy, Minnie, <i>Education</i> , ...	Lawrence.
Kinney, Kate V., <i>Sociology</i> , ...	Dearborn, Mo.
Kirk, Isadora, <i>English</i> , ...	Topeka.
Kline, Charles William, <i>Sociology</i> , ...	Hutchinson.
Knox, Florence, <i>English</i> , ...	Kansas City.
Kruse, Henry O., <i>German</i> , ...	Lawrence.
Landis, May, <i>Botany</i> , ...	Lawrence.
Leslie, Elizabeth, <i>English</i> , ...	Lawrence.
Logan, Kirk H., <i>Botany</i> , ...	Cherryvale.
Logan, Spencer R., <i>Chemistry</i> , ...	Cherryvale.
Mackenzie, Pearl Bartlett, <i>French</i> , ...	Kansas City.
Maloney, Katherine Louise, <i>Botany</i> , ...	Newton.
Mattoon, Helen, <i>Drawing</i> , ...	Iola.
Meek, Walter J., <i>Entomology</i> , ...	Chapman.
Metcalf, George L., <i>Geology</i> , ...	Wellington.
Miller, Bessie E., <i>Chemistry</i> , ...	Lawrence.
Moodie, Roy L., <i>French</i> , ...	Lawrence.
Morgan, Rose, <i>German</i> , ...	Leavenworth.
Morris, Nellie V., <i>Mathematics</i> , ...	Lawrence.
Mosher, Ida May, <i>Chemistry</i> , ...	Kinsley.
Myers, Clarence B., <i>Mathematics</i> , ...	Marysville.
McCoy, John P., <i>German</i> , ...	Ellsworth.
McCrary, Virginia, <i>Latin</i> , ...	Lawrence.
McCroskey, Orrell Emily, <i>English</i> , ...	Lawrence.
McNally, Mary, <i>English</i> , ...	Independence.
Nickles, Jennie, <i>Education</i> , ...	Hays.
Nowlin, Nadine, <i>Education</i> , ...	Hiawatha.
Olney, Frank H., <i>Education</i> , ...	Lawrence.

Palmer, Miriam, <i>Entomology</i> ,	. . .	Lawrence.
Pearson, Clarence Peter, <i>Latin</i> ,	. . .	Enterprise.
Pennel, Charles W., <i>German</i> ,	. . .	Moline.
Piatt, Sarah, <i>Education</i> ,	. . .	Lawrence.
Polster, Flora Lyda, <i>German</i> ,	. . .	Baxter Springs.
Porter, Alice Julia, <i>German</i> ,	. . .	Lawrence.
Potter, Ulysses G., <i>Latin</i> ,	. . .	Hiawatha.
Reid, Elizabeth, J., <i>English</i> ,	. . .	Lawrence.
Risley, Gertrude, <i>English</i> ,	. . .	Lawrence.
Riste, W. G., <i>Chemistry</i> ,	. . .	Norton.
Roberts, Bertha, <i>Sociology</i> ,	. . .	Lawrence.
Rouse, Martha, <i>English</i> ,	. . .	Kansas City, Mo.
Sanborn, Charles E., <i>Entomology</i> ,	. . .	Lawrence.
Sanborn, Clarence G., <i>Entomology</i> ,	. . .	Girard.
Schilling, Alice Irene, <i>English</i> ,	. . .	Mulberry.
Shaw, William P., <i>German</i> ,	. . .	Leavenworth.
Sheets, Lena M., <i>English</i> ,	. . .	Marion.
Sheldon, Miriam, <i>Drawing</i> ,	. . .	Topeka.
Shepherd, William M., <i>Economics</i> ,	. . .	Tonganoxie.
Sims, Algie F., <i>Law</i> ,	. . .	Severy.
Stelter, Benjamin Franklin, <i>Mathematics</i>	. . .	Delphos.
Stem, Ida, <i>Drawing</i> ,	. . .	Leavenworth.
Stone, Sadie, <i>Drawing</i> ,	. . .	Lawrence.
Street, Hortense, <i>Drawing</i> ,	. . .	Lawrence.
Strong, Mary E., <i>French</i> ,	. . .	Lawrence.
Taylor, Cora A., <i>Sociology</i> ,	. . .	Lawrence.
T'Miller, Eleanor,	. . .	Lawrence.
Tudhope, Sarah, <i>English</i> ,	. . .	Kansas City, Mo.
Turner, Alice Norton, <i>Education</i> ,	. . .	Newton.
VanFleet, Charles L., <i>Mathematics</i> ,	. . .	Lawrence.
Virmond, Bertha, <i>Latin</i> ,	. . .	Hays.
Wagstaff, Elizabeth, <i>French</i> ,	. . .	Lawrence.
Wall, Emma, <i>Law</i> ,	. . .	Lawrence.
Warren, Luella, <i>Mathematics</i> ,	. . .	Hutchinson.
Wasson, Jennie B., <i>English</i> ,	. . .	Sterling.
White, E. Ambrose, <i>Geology</i> ,	. . .	Lawrence.
Wierenga, Charles, <i>Mathematics</i> ,	. . .	Cawker City.
Williams, Harriet D., <i>English</i> ,	. . .	Newton.
Willis, Susie, <i>Drawing</i> ,	. . .	Lawrence.
Wilson, Ada, <i>French</i> ,	. . .	Olathe.
Windigate, Oscar Jerome, <i>Mathematics</i> ,	. . .	Nickerson.
Winning, Robert, <i>French</i> ,	. . .	Kansas City, Mo.
Woodin, Clara, <i>Botany</i> ,	. . .	Lawrence.
Wyatt, John Earl, <i>French</i> ,	. . .	Salina.
Yates, James Anderson, <i>Geology</i> ,	. . .	Ottawa.
Zook, Catherine, <i>English</i> ,	. . .	Lawrence.

Summary of Enrolment.

1903-'04.

DEPARTMENTS.	Men.	Women.	Total.
The Graduate School	32	21	56
The College of Liberal Arts and Sciences	277	338	615
Senior Class.....	53	50	103
Junior Class.....	25	75	100
Sophomore Class.....	45	65	110
Freshman Class.....	110	115	225
Special Students.....	44	33	77
The School of Engineering	282	2	284
Senior Class.....	22	.....	22
Junior Class.....	29	.....	29
Sophomore Class.....	25	.....	25
Freshman Class.....	118	2	120
Special Students.....	24	.....	24
Unclassified.....	64	.....	64
The School of Law	144	1	145
Senior Class.....	39	.....	39
Middle Class.....	38	1	39
Junior Class.....	59	.....	58
Special Students.....	8	.....	8
The School of Fine Arts	5	85	90
Graduates.....	.....	6	6
Senior Class.....	2	4	6
Junior Class.....	.....	4	4
Sophomore Class.....	.....	13	13
Freshman Class.....	1	19	20
Special Students.....	2	39	41
The School of Pharmacy	67	5	72
Senior Class.....	21	3	24
Junior Class.....	32	1	33
Sophomore Class.....	1	.....	1
Freshman Class.....	2	.....	2
Special Students.....	11	1	12
The School of Medicine	21	1	22
Second Year.....	5	.....	5
First Year.....	16	1	17
The Summer Session	63	71	134
Graduate Students.....	9	9	18
Undergraduate Students.....	54	62	116
Total enrolment in all the schools.....	891	527	1,418
Names counted twice.....	58	41	99
Total registration, 1903-'04	833	486	1,319

Kansas students..... 1252

Students from other states..... 67

Classification of Students

By Kansas Counties.

Allen	23	Geary.....	1	Osborne.....	1
Anderson.....	3	Gove.....	2	Ottawa.....	19
Atchison.....	13	Greenwood.....	8	Pawnee.....	3
Barber.....	1	Harper.....	7	Phillips.....	5
Barton.....	11	Harvey.....	18	Pottawatomie.....	9
Bourbon.....	18	Jackson.....	7	Pratt.....	5
Brown.....	39	Jefferson.....	19	Reno.....	19
Butler.....	5	Jewell.....	10	Republic.....	14
Chase.....	4	Johnson.....	26	Rice.....	9
Chautauqua.....	5	Kingman.....	5	Riley.....	6
Clark.....	1	Kiowa.....	5	Rooks.....	5
Clay.....	13	Labette.....	16	Rush.....	8
Cloud.....	5	Leavenworth.....	24	Russell.....	3
Crawford.....	21	Linn.....	9	Saline.....	10
Cherokee.....	14	Logan.....	1	Sedgwick.....	20
Coffey.....	9	Lyon.....	11	Seward.....	2
Cowley.....	13	Marion.....	12	Shawnee.....	29
Comanche.....	1	Marshall.....	14	Sherman.....	2
Decatur.....	2	McPherson.....	14	Smith.....	7
Dickinson.....	14	Meade.....	2	Stafford.....	3
Doniphan.....	5	Miami.....	11	Sumner.....	16
Douglas*.....	381	Mitchell.....	14	Thomas.....	2
Edwards.....	4	Montgomery.....	34	Trego.....	5
Elk.....	13	Morris.....	1	Wabaunsee.....	1
Ellis.....	5	Neosho.....	20	Wallace.....	3
Ellsworth.....	9	Nemaha.....	11	Washington.....	5
Finney.....	7	Ness.....	2	Wilson.....	5
Ford.....	2	Norton.....	3	Woodson.....	2
Franklin.....	15	Osage.....	13	Wyandotte.....	53

* A large number of students whose names appear in this catalogue as residents of Douglas county are so catalogued because they temporarily reside in Lawrence for the purpose of attending the University.

Classification by States.

Colorado.....	2	Oklahoma territory	15
Japan.....	2	South Dakota.....	1
Kansas.....	1252	Virginia.....	1
Missouri.....	42	Wyoming.....	1
Montana.....	1		
New Mexico.....	1	Total.....	1319
Ohio.....	1		

Officers of Alumni Associations.

The College of Liberal Arts and Sciences, 1903-'04.

DR. ERNEST F. ROBINSON, '93,	President.
THORNTON COOKE, '93,	Vice-president.
HELEN SUTLIFF, '90,	Recording Secretary.
ELMER F. ENGEL, '92	Corresponding Secretary.
IRVING HILL, '96,	Treasurer.
OLIN TEMPLIN, '86,	} Executive Committee.
KATE STEPHENS, '75,	
KATE RIGGS, '94,	
WILSON STERLING, '83,	
RUSSELL WHITMAN, '93,	

The School of Law, 1903-'04.

CLYDE MILLER, '97,	President.
HUBERT LARDNER, '02,	Vice-president.
ORD CLINGMAN, '99,	Secretary and Treasurer.

The School of Pharmacy, 1903-'04.

DANIEL H. SPENCER, '97,	President.
JULIAN JENKINSON, '04,	Vice-president.
INA L. STILSON, '03,	Recording Secretary.
ROBERT H. NEEDHAM, '01,	Corresponding Secretary.
HARRY L. RAYMOND, '83,	Treasurer.

Acknowledgments.

Gifts to the Library, March 1903 to March 1904.

BOOKS.

	<i>Vols.</i>
American Pharmaceutical Association.....	1
Bowersock, Hon. J. D., Lawrence	2
Canada, Minister of Education, Toronto.....	1
Carpenter, Charles Ernest, Wellsville.....	20
Cone, Prof. W. R., Lawrence.....	4
Connecticut Railroad Commissioners.....	1
Dresser, Amos, Lawrence.....	1
Folks, Willis K.....	1
Gillham, Miss Clara S., Lawrence.....	1
Harper & Brothers, New York.....	1
Hunter, Prof. S. J., Lawrence.....	2
Illinois Bureau of Labor.....	1
Iowa Geological Survey.....	1
Library of Congress, Washington, D. C.....	1
Kansas Secretary of State, Topeka.....	1
Kansas State Librarian, Topeka	3
Kansas Superintendent of Insurance, Topeka.....	1
Kansas Superintendent of Public Instruction, Topeka.....	1
Maine Bureau of Labor.....	1
Marvin, Prof. F. O., Lawrence.....	1
Massachusetts Board of Railroad Commissioners.....	1
Massachusetts State Board of Health.....	1
Missouri Botanical Garden, St. Louis.....	1
Moore, Col. H. L., Lawrence.....	1
Morris, Frederick, Kansas City, Mo.....	10
New Jersey State Library, Trenton.....	1
New York State Historian, Albany.....	5
New York State Library, Albany.....	12
Robinson, Mrs. Sara T. D., Lawrence.....	1
Sells, E. W., New York city.....	1
Smithsonian Institution, Washington, D. C.....	3
Sterne, Mrs. Simon, New York city.....	1
Stimpson, F. E., Lawrence.....	23
United States Bureau of American Ethnology, Washington, D. C.....	1
United States Bureau of Education, Washington, D. C.....	2
United States Department of Labor, Washington, D. C.....	1
United States Department of State, Washington, D. C.....	5
United States Geological Survey, Washington, D. C.....	1
United States Government Printing Office. Superintendent of Documents, Washington, D. C.....	234
United States Interstate Commerce Commission.....	1
United States National Museum, Washington, D. C.....	1
United States Treasury Department.....	1
United States War Department.....	1
Walker, Prof. A. T., Lawrence.....	2
Washington Bureau of Labor, Seattle	1
Wilcox, Prof. A. M., Lawrence	2

NEWSPAPERS AND PERIODICALS.

Given by the publishers, unless otherwise indicated.

DAILIES.

Arkansas City Daily Traveler	Arkansas City.
Chanute Daily Tribune	Chanute.
Coffeyville Daily Journal	Coffeyville.
Emporia Gazette	Emporia.
Fort Scott Monitor	Fort Scott.
Hutchinson News	Hutchinson.
Iola Daily Register	Iola.
Kansas City Journal	Kansas City.
Kansas City World	Kansas City.
Lawrence Daily Gazette	Lawrence.
Lawrence Daily Journal	Lawrence.
Lawrence Daily World	Lawrence.
McPherson Daily Republican	McPherson.
Newton Evening Kansan-Republican	Newton.
Parsons Sun	Parsons.
St. Joseph Gazette	St. Joseph, Mo.
Salina Daily Republican-Journal	Salina.
Topeka Capital	Topeka.
Topeka Daily Herald	Topeka.
Topeka State Journal	Topeka.

WEEKLY NEWSPAPERS AND PERIODICALS.

Abilene Democrat	Abilene.
Abilene Weekly Chronicle	Abilene.
Advocate Democrat	Marysville.
Alma Enterprise	Alma.
Anthony Republican	Anthony.
Atchison Weekly Globe	Atchison.
Barton County Democrat	Great Bend.
Baxter Springs News	Baxter Springs.
Beattie Eagle	Beattie.
Belleville Freeman	Belleville.
Belleville Telescope	Belleville.
Beloit Gazette	Beloit.
Beloit Times	Beloit.
Better Way	Minneapolis.
Blue Mound Sun	Blue Mound.
Breeders' Gazette	Chicago, Ill.
Brown County World	Hiawatha.
Burlington Independent	Burlington.
Burlington Republican	Burlington.
Caney Chronicle	Caney.
Cedar Vale Commercial	Cedar Vale.
Central Kansas Democrat	Lyons.
Chapman Advertiser	Chapman.
Chase Register	Chase.
Chetopa Advance	Chetopa.
Christian Register	Boston, Mass.
Clark County Clipper	Ashland.
Clay Center Dispatch	Clay Center.
Clay Center Times	Clay Center.
Coffeyville Record	Coffeyville.

Columbus Advocate	Columbus.
Commoner	Lincoln, Neb,
Conway Springs Star.....	Conway Springs.
Council Grove Republican.....	Council Grove.
Democratic Messenger.....	Eureka.
Dickinson County News.....	Abilene.
Easton Light	Easton.
El Dorado Republican	El Dorado.
Ellsworth Messenger	Ellsworth.
Endora News.....	Eudora.
Eureka Herald.....	Eureka.
Evangelical Visitor.....	Harrisburg, Pa.
Fredonia Herald.....	Fredonia.
Galena Republican.....	Galena.
Garnett Journal.....	Garnett.
Glasco Sun.....	Glasco.
Globe.....	Meade.
Grant County Republican.....	Ulysses.
Great Bend Register.....	Great Bend.
Herald of Gospel Liberty	Dayton, Ohio.
Holton Recorder.....	Holton.
Holton Signal	Holton.
Howard Courant	Howard.
Humboldt Herald (semiweekly)	Humboldt.
Independent News.....	Girard.
Irving Leader	Irving.
Jetmore Republican.....	Jetmore.
Kansas Agitator.....	Garnett.
Kansas Democrat	Hiawatha
Kansas Farmer	Topeka.
Kansas Issue.....	Topeka.
Kansas Star.....	Olathe.
Kingman Journal.....	Kingman.
Kiowa News	Kiowa.
La Cygne Weekly Journal.....	La Cygne.
Larned Weekly Chronoscope.....	Larned.
Lawrence Germania.....	Lawrence.
Lindsborg News.....	Lindsborg.
Linn County Republic.....	Mound City.
Live Stock Farmer.....	Dodge City.
Logan Republican.....	Logan.
Long Island Leader.....	Long Island.
Lyons Republican	Lyons.
McLouth Times.....	McLouth.
Manhattan Mercury	Manhattan.
Manhattan Nationalist.....	Manhattan.
Marion Record.....	Marion.
Marshall County News.....	Marysville.
Messenger.....	South Center.
Miami Republica.....	Paola.
Minneapolis Messenger.....	Minneapolis.
Monitor Press.....	Wellington.
Mound Valley Herald	Mound Valley.
Neodesha Register.....	Neodesha.

Ness County News.....	Ness City.
New Era	Formosa.
New Voice.....	Chicago, Ill.
Norton Courier.....	Norton.
Olathe Mirror.....	Olathe.
Olathe Tribune.....	Olathe.
Osage City Free Press.....	Osage City.
Osawatomie Graphic.....	Osawatomie.
Osborne County Farmer.....	Osborne.
Ottawa Independent.....	Ottawa.
Ottawa Weekly Herald.....	Ottawa.
Paola Times.....	Paola.
People's Voice.....	Wellington.
Pleasanton Observer.....	Pleasanton.
Pratt Union.....	Pratt.
Public Opinion.....	Osage City.
Record	Russell.
Republic City News.....	Republic City.
Republican.....	Hays City.
Republican Record.....	Erie.
Rice County Eagle.....	Lyons.
Robinson Index	Robinson.
Rooks County Record	Stockton.
Rosedale Commercial.....	Rosedale.
Rush Center Breeze.....	Rush Center.
Sabetha Star.....	Sabetha.
St. Mary's Journal.....	St. Marys.
St. Paul Journal	St. Paul.
Salina Weekly Union.....	Salina.
Seneca Courier-Democrat.....	Seneca.
Seneca Tribune	Seneca.
South Kansas Tribune.....	Independence.
Star and Kansan.....	Independence.
Torch of Liberty.....	Mound City.
United Presbyterian.....	Pittsburg, Pa.
University Record	Chicago, Ill.
Wamego Times.....	Wamego.
Washington Register	Washington.
Washington Republican	Washington.
Waterville Telegraph.....	Waterville.
Wathena Times.....	Wathena.
Wathena Weekly Republican.....	Wathena.
Weekly Kansas Chief	Troy.
Weekly Review	Frankfort.
Weekly Sentinel	Tonganoxie.
Western Call.....	Beloit.
Western Life.....	Leavenworth.
Western Spirit.....	Paola.
Westmoreland Recorder.....	Westmoreland.
Wichita Eagle.....	Wichita.
Williamsburg Star	Williamsburg.
Winfield Courier.....	Winfield.
Wyandotte Herald	Kansas City, Kan.

SEMI-MONTHLIES.

American Druggist and Pharmaceutical Record.....	New York.
Clay Record.....	Chicago, Ill.
Mines and Minerals	Scranton, Pa.
Vanguard.....	St. Louis, Mo.
Virginia Medical Semi-monthly.....	Richmond, Va.
Western Odd Fellow.....	Topeka.

MONTHLIES.

Advocate of Peace.....	Boston, Mass.
Animals' Defender.....	Boston, Mass.
Apotheker Zeitung	New York.
Draftsman.....	Cleveland, Ohio.
Hammer and Pen.....	New York.
Insurance Magazine.....	Kansas City, Mo.
Kansas Churchman.....	Leavenworth.
Kansas City Medical Record.....	Kansas City, Mo.
Meyers Bros. Druggist.....	St. Louis, Mo.
Michigan Alumnus (Prof. Eugenie Galloo).....	Ann Arbor, Mich.
Our Dumb Animals.....	Boston, Mass.
School and Fireside.....	Hutchinson.
Western Drug Record.....	Kansas City.
Western School Journal.....	Topeka.

QUARTERLIES.

Bulletin of the Wool Manufacturers.....	Boston.
Hartford Seminary Record	Hartford, Conn.
Transactions of the American Mathematical Society (Mrs. H. B. Newson).....	New York.

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